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CONTENTS

General conservation
Natural resources & climate 2
Soils 2
Conservation education 2
Bibliographies, directories, biography, history 3
Plants
General, ecology, techniques 3
Forest surveys 4
Wildlife
Biotas, ecology, natural history 4
Nature protection & rare & extinct species 5
Effects of chemicals, weather, cars, etc. 5
Parasites & diseases 8
Biometrics 8
Techniques 9
Management & research, general .. 9
Hunting areas & problems 11
Economic & other values 11
Predation, crop damage, control 12
Reports of organizations & reports of harvests 13
Management & ecology of habitats & animals
Wetlands & wildlife 13
Rangeland & wildlife 14
Forestland Management for & damage by wildlife 15
Mammals
General 16
Techniques 17
Faunas & manuals 18
Parasites & diseases 19
Shrews, moles, bats 20
Rabbits & pikas 21
Rodents
Miscellaneous 23
Mammals
Rodents
Rattus & Mus 26
Sciurids 28
Beaver 29
Fur animals, general 30
Carnivores
Bears 30
Raccoon, ringtail, coati 31
Mustelids 31
Dogs, wolves, foxes 32
Cats 33
Big game
General 34
Deer (Odocoileus) 42
Marine 47
Other groups 50
Birds
General 50
Techniques 51
Morphology & physiology 52
Behavior 53
Migration & banding reports 55
Manuals, faunas, communities ... 57
Populations & fluctuations 59
Economics, control, mortality .. 60
Parasites & diseases 62
Game birds--general 62
Quail 62
Pheasants 63
Grouse, partridge, etc. 65
Turkey 67
Doves & pigeons 68
Waterfowl 68
Swans & geese 75
Cranes, rails, shorebirds 76
Hawks & owls 81
Blackbirds, starlings, crows ... 84
Other birds 86
Reptiles & amphibians 90
Author index 97

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NATURAL RESOURCES & CLIMATE

Stoddart, D. R. THE CONSERVATION OF ALDABRA. *Geogr. J.* (London) 134(4): 471-486 + 4 pls. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 2*

U.S. Department of the Interior. NATURAL RESOURCES OF OKLAHOMA. *USDI.* 54 p., illus. 1969. For sale at 75¢ by Supt. Documents. *WR 137: 2*
With a section on fish and wildlife.

SOILS

Brown, Wm. T., and others. SOIL SURVEY OF LAKE COUNTY, TENNESSEE. *SCS.* i + 39 p., 3 figs. + 6 pls. + single-fold maps based on aerial photos and bound in. Sept. 1969. For sale by Supt. Documents. *WR 137: 2*

Daniels, D. M., and others. SOIL SURVEY OF TETON AREA, IDAHO-WYOMING. *SCS.* i + 95 p., 21 figs. + single-fold maps based on aerial photos and bound in. Oct. 1969. For sale by Supt. Documents. *WR 137: 2*
With a section on management of the soils for wildlife.

Isgrig, Dan, and others. SOIL SURVEY OF SAN BENITO COUNTY, CALIFORNIA. *SCS.* i + 111 p., 16 figs. + single-fold maps based on aerial photos and bound in. Nov. 1969. For sale by Supt. Documents. *WR 137: 2*

Matthews, Earle D. SOIL SURVEY OF CARROLL COUNTY, MARYLAND. *SCS.* i + 92 p., 16 figs. + single-fold maps based on aerial photos and bound in. Oct. 1969. For sale by Supt. Documents. *WR 137: 2*
With a section on wildlife.

Robbins, John M., and others. SOIL SURVEY OF PERRY COUNTY, INDIANA. *SCS.* i + 70 p., 14 figs. + single-fold maps based on aerial photos and bound in. Sept. 1969. For sale by Supt. Documents. *WR 137: 2*
With a section on wildlife.

Slota, Robert W., and others. SOIL SURVEY OF VERNON COUNTY, WISCONSIN. *SCS.* i + 82 p., 15 figs. + single-fold maps based on aerial photos and bound in. Oct. 1969. For sale by Supt. Documents. *WR 137: 2*

CONSERVATION EDUCATION

Carlson, Karen. THE WILDLIFE EDUCATION PROGRAMME: A CRITICAL EVALUATION. *East African Agr. & Forestry J.* 33(spec. issue): 247-250. June 1968. *WR 137: 2*
[Northwestern Univ., Chicago, Ill.]

CONSERVATION EDUCATION--Continued

Gilbert, V. C. THE COLLEGE OF AFRICAN WILDLIFE MANAGEMENT: ITS ROLE IN CONSERVATION EDUCATION. *East African Agr. & Forestry J.* 33(spec. issue): 226-228. June 1968. *WR 137: 3*
[Coll. African Wildl. Mgmt., P.O. Box 3031, Mashi, Tanzania.]

Kettle, D. S. UNIVERSITY TRAINING IN WILDLIFE MANAGEMENT. *East African Agr. & Forestry J.* 33(spec. issue): 244-246. June 1968. *WR 137: 3*
[Univ. Coll., Nairobi, Kenya.]

Marckworth, Gordon D. STATISTICS FROM SCHOOLS OF FORESTRY FOR 1968: DEGREES GRANTED AND ENROLLMENTS. *J. Forestry* 67(9): 638, 640. Sept. 1969. *WR 137: 3*
[Univ. Wash., Seattle.] Increase in enrollment has continued, increasing from 12,358 in the autumn of 1967 to 13,312 in 1968. Wildlife management accounted for 17% of the undergraduate enrollment. In 1968 at 47 forestry schools, degrees were granted in wildlife management as follows: master's, 333 (16%), and doctoral, 116.

Milne, R. C. THE ROLE OF WILDLIFE CONSERVATION EDUCATION IN KENYA. *East African Agr. & Forestry J.* 33(spec. issue): 229-232. June 1968. *WR 137: 3*
[African Wildl. Leadership Foundation, P.O. Box 2076, Nairobi, Kenya.]

Muka, S. F. CONSERVATION EDUCATION IN THE PRIMARY AND SECONDARY SCHOOL SYLLABI. *East African Agr. & Forestry J.* 33(spec. issue): 241-243. June 1968. *WR 137: 3*
[Ministry Educ., P.O. Box 30231, Nairobi, Kenya.]

Randall, David, and John Lane. NINTH ANNUAL REPORT OF THE BRANDON JUNIORS' NESTBOX PROJECT. *Blue Jay* 27(4): 215-216. Dec. 1969. *WR 137: 3*
[Brandon, Manitoba, Canada.] Nesting totals (first broods) for 2100 nest boxes are listed.

Russell, H. G. F. THE TANZANIA NATIONAL PARKS EDUCATION PROJECT. *East African Agr. & Forestry J.* 33(spec. issue): 233-236. June 1968. *WR 137: 3*
[Tanzania Natl. Parks, P.O. Box 3134, Arusha, Tanzania.]

Sindiyo, D. M. GAME DEPARTMENT FIELD EXPERIENCE IN PUBLIC EDUCATION. *East African Agr. & Forestry J.* 33(spec. issue): 237-240. June 1968. *WR 137: 3*
[Game Dept., P.O. Kajiado, Kenya.]

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Baillie, James L. IN MEMORIAM: JAMES ALEXANDER MUNRO. *Auk* 86(4): 624-630, 1 pl. Oct. 1969. *WR 137: 3*
[Royal Ontario Mus., 100 Queen's Park, Toronto, Canada.] Includes a bibliography of some of the ornithological publications of Mr. Munro appearing between 1904 and 1958.--Courtesy/ Paul A. Stewart.

Rylander, Kent, and Barbara White. A BIBLIOGRAPHY OF TEXAS BIRDS. *Bull. Texas Ornithol. Soc.* 2(4): 42-51. Oct.-Dec. 1969. *WR 137: 3*
A list of 445 articles on Texas birds published from 1950 through 1967.

PLANTS--GENERAL, ECOLOGY, TECHNIQUES

Gwynne, M. D. THE NUTRITIVE VALUES OF *ACACIA* PODS IN RELATION TO *ACACIA* SEED DISTRIBUTION BY UNGULATES. *East African Wildl. J.* 7: 176-178. Aug. 1969. *WR 137: 3*
[P.O. Box 30148, Nairobi, Kenya.]

PLANTS--GENERAL, ECOLOGY, TECHNIQUES--Continued

Ross, I. C., and G. N. Harrington. THE PRACTICAL ASPECTS OF IMPLEMENTING A CONTROLLED BURNING SCHEME IN THE KIDEPO VALLEY NATIONAL PARK (SECOND YEAR OF OPERATION). *East African Wildl. J.* 7: 39-42. Aug. 1969. *WR 137: 4*

[Kidepo Valley Natl. Park, Private Bag, P.O. Kitgum, Uganda.] Summary: A controlled burning scheme, in conjunction with experimental plots, was necessary in order to investigate the effects of fire on tree regeneration in an area which otherwise suffers frequent uncontrolled fires and where an important tree species, *Acacia gerrardii* Benth. var. *gerrardii*, was failing to regenerate. The second years' results are described. The scheme was not successful in excluding uncontrolled fires. However, further experience, indicating yet more problems, was gained.

PLANTS--FOREST SURVEYS

Choate, Grover A., and John S. Spencer, Jr. FORESTS IN SOUTH DAKOTA. *USDA Forest Serv. Resource Bull.* INT-8. iv + 40 p., illus. + fold-out map. 1969. *WR 137: 4*

[Intermountain Forest & Range Expt. Sta., Ogden, Utah.] Statistics on forest area, timber volumes, growth, removals, and industries based on the Forest Survey completed in 1965.

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Childs, Henry E., Jr. BIRDS AND MAMMALS OF THE PITMEGEA RIVER REGION, CAPE SABINE, NORTHWESTERN ALASKA. *Biol. Paps. Univ. Alaska* 10: 1-76. May 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 4*

Hirschfeld, Sue E. VERTEBRATE FAUNA OF NICHOL'S HAMMOCK, A NATURAL TRAP. *Quart. J. Fla. Acad. Sci.* 31(3): 177-189. 1968. [From Biol. Abstr. 50(22), 1969.] *WR 137: 4*

[Univ. Calif., Berkeley.]

Holdgate, M. W., P. J. Tilbrook, and R. W. Vaughn. THE BIOLOGY OF BOUVETØYA. *British Antarctic Surv. Bull.* no. 15. p. 1-7. 1968. [From Auk 86(4), 1969.] *WR 137: 4*

Biota of the southernmost volcanic island of the Mid-Atlantic Ridge.

Jenkins, James H. WILDLIFE VALUES--QUANTITY AND QUALITY IN SOUTH AFRICA. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 297-303. 1969. *WR 137: 4*

[Univ. Ga., Athens.]

Macnae, William. A GENERAL ACCOUNT OF THE FAUNA AND FLORA OF MANGROVE SWAMPS AND FORESTS IN THE INDO-WEST-PACIFIC REGION. *Adv. Marine Biol.* 6: 73-270. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 4*

McDowell, Robert D. THE EXTRINSIC VALUE OF DIVERSITY IN AESTHETIC MENSURATION. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 281-283. 1969. *WR 137: 4*

[Univ. Conn., Storrs.]

Norderhaug, Magnar. IAKTTAGELSER OVER DYRELIVET PA SVALBARD 1967. [OBSERVATIONS OF THE ANIMAL LIFE IN SVALBARD 1967.] *Norsk Polarinst. Arbok 1967.* p. 197-205. 1969. [From Biol. Abstr. 50(17), 1969. In Norwegian with Russian and English summ.] *WR 137: 4*

Pimlott, Douglas H. THE VALUE OF DIVERSITY. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 265-280, 1 fig. 1969. *WR 137: 4*

[Univ. Toronto, Toronto, Ontario, Canada.] Factors which influence species diversity, diversity and stability of populations, diversity and energy flow, habitat diversity, and diversity and aesthetics are major topics of discussion.

Porter, Warren P., and David M. Gates. THERMODYNAMIC EQUILIBRIA OF ANIMALS WITH ENVIRONMENT. *Ecol. Monog.* 39(3): 227-244, 24 figs. Summer 1969. *WR 137: 5*
[2315 Tower Grove Ave., St. Louis, Mo.] A mathematical model for the energy budgets of animals is derived based on simple concentric cylinder approximations to body geometry. From the physiological requirement for a certain body temperature or temperature range, the simultaneous values of radiation, air temperature, and wind speed are derived in order that the animal is in energy balance. The three dimensional space of radiation absorbed, wind speed, and air temperature is referred to as the climate space which the animal must occupy in order to survive. Climate spaces for the following animals are derived: desert iguana, masked shrew, zebra finch, cardinal, jack rabbit, pig, and sheep. In addition, the climate spaces for families of hypothetical poikilotherms and homeotherms are derived.--From summ. Courtesy/ Paul A. Stewart.

Riney, Thane A. WILDLIFE QUALITY AND QUANTITY IN SOUTH AFRICA--A REACTION. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 304-306. 1969. *WR 137: 5*
[FAO, Rome, Italy.]

Turček, F. J. ECOLOGICAL DISTRIBUTION OF BIRDS AND MAMMALS OF EUROPE AND SOME CONSEQUENCES. *Misc. Repts. Yamashina's Inst. Ornithol. Zool.* 5(4): 305-312. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 5*

Turček, F. J. [VERTEBRATE ECOLOGY OF THE TATRA MOUNTAIN OPEN WOODS.] *Biologia* (Bratislava) 23(8): 601-609. 1968. [From Bird-Banding 40(3), 1969. In Slovak with Russian and English summ.] *WR 137: 5*

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Dupuy, A. LA FAUNE MÉNACÉE DE L'ALGÉRIE ET SA PROTECTION. [THE ENDANGERED FAUNA OF ALGERIA AND ITS PROTECTION.] *Bull. Soc. Sci. Nat. Phys. Maroc* (Rabat) 47(3-4): 329-354. 1967 (1968). [From J. Mammal. 50(4), 1969. In French.] *WR 137: 5*

Dupuy, A. RÉPARTITION ACTUELLE DES ESPÈCES MÉNACÉES DE L'ALGÉRIE. [CURRENT DISTRIBUTION OF ENDANGERED SPECIES OF ALGERIA.] *Bull. Soc. Sci. Nat. Phys. Maroc* (Rabat) 47(3-4): 355-385. 1967 (1968). [From J. Mammal. 50(4), 1969. In French.] *WR 137: 5*

Marshall, David B. ENDANGERED PLANTS AND ANIMALS OF OREGON / III. BIRDS. *Oreg. Agr. Expt. Sta. Spec. Rept.* 278. 23 p. July 1969. *WR 137: 5*
[Bur. Sport Fisheries & Wildl., Portland, Oreg.] This report covers the assumed status of 68 spp. or sspp. of birds. Three have been judged endangered or threatened at national or international level, seven additional ones are endangered at the state level, and the remaining 58 forms are "grouped into various other categories of special bearing on the subject of endangered species."

WILDLIFE--EFFECTS OF CHEMICALS, WEATHER, CARS, ETC.

Anderson, Daniel W., Joseph J. Hickey, Robert W. Risebrough, Donald F. Hughes, and Robert E. Christensen. SIGNIFICANCE OF CHLORINATED HYDROCARBON RESIDUES TO BREEDING PELICANS AND CORMORANTS. *Canadian Field-Nat.* 83(2): 91-112, 4 figs. Apr.-June 1969. *WR 137: 5*
[Univ. Wis., Madison.] DDE appears to be the environmental pollutant most responsible for thin eggshells. The effects upon avian reproduction of the polychlorinated biphenyls and other environmental pollutants remain to be determined.--From concl.

Bianki, V. V., and V. N. Karpovich. [EFFECT OF ABNORMAL ICE-COVER OF THE WHITE SEA AND MURMAN IN 1966 UPON BIRDS AND MAMMALS.] *Zool. Zhur.* 48(6): 871-875, illus. 1969. [From Biol. Abstr. 50(23), 1969. In Russian with English summ.] *WR 137: 5*
[Kandalaksha State Game Reserve, Kandalaksha, USSR.]

Gilbert, Frederick F. PHYSIOLOGICAL EFFECTS OF NATURAL DDT RESIDUES AND METABOLITES ON RANCH MINK. *J. Wildl. Mgmt.* 33(4): 933-943. Oct. 1969. *WR 137: 6*
[Univ. Maine, Orono.] Abstract: Several species of fish were collected from the Miramichi River in New Brunswick, Canada, analyzed for DDT residues and metabolites, and then incorporated into a commercial mink feed mixture. Ranch mink *(Mustela vison)* fed this diet developed higher levels of DDE in liver and adipose tissue, than did mink on a control ration. Males appeared to concentrate higher tissue levels than females, but the effect on spleen and adrenal weights was greater in the females. Erythrocyte count, leukocyte count, hemoglobin, and hematocrit were all lower in the animals fed the DDT ration, but blood pH did not appear to be so affected. Females on the experimental diet had a significantly greater *($P<0.01$)* embryonic loss (counting losses to 24 hours post birth) than did control littermates (3.0 vs 1.0). The sex ratio was weighted in favor of female kits in the litters of the females fed the DDT diet.

Harper, William R. A LITERATURE REVIEW ON ANTIFERTILITY SUBSTANCES. *Colo. Div. Game, Fish & Parks, Spec. Rept.* no. 20. iv + 15 p., 6 figs. June 1969. Price $1.00. *WR 137: 6*
Abstract: Animal fertility and productivity can be affected by chemicals and radiation. Fertility has been reduced in male mammals treated with cadmium salts, alkylating agents, nitrofuran compounds and other chemical substances. Radiation effects generally are indiscriminate. On the other hand, alkylating agents and nitrofuran derivatives affect specific stages of gametogenesis. (Some alkylating agents and steroids cause tumors, sarcomas, papillomas and skin carcinomas.) Ovulation has been stopped by chemicals which block pituitary gonadotropin secretion, modify circulating gonadotropins or directly affect the ovaries.

Helminen, Matti, and Tapio Raitis. VESAKKOHORMONIEN VÄLITTÖMÄSTÄ VAIKUTUKSESTA RIISTAELÄIMIIN. [THE TOXICITY AND IMMEDIATE EFFECTS UPON GAME ANIMALS OF 2,4-D AND 2,4,5-T HERBICIDES.] *Suomen Riista* 21: 7-15, 3 figs. 1969. In Finnish with English summ. *WR 137: 6*
Pheasant studies.

Jensen, S., A. G. Johnels, M. Olsson, and G. Otterlind. DDT AND PCB IN MARINE ANIMALS FROM SWEDISH WATERS. *Nature* 224(5216): 247-250, 1 fig. 18 Oct. 1969. *WR 137: 6*
[Inst. Analytical Chemistry, Stockholm, Sweden.] Abstract: Analyses of pesticide residues in a wide range of marine organisms from the coastal waters of Sweden show that there is a marked contamination in the Baltic. There are signs of an increase in polychlorinated bipheyls (PCB) from north to south in this area. Exceptionally large amounts of residues were found in white-tailed eagles from the archipelago of Stockholm.

Kenaga, Eugene E. CHEMICAL INDUSTRY EFFORTS IN SOLVING PESTICIDE-WILDLIFE AND ENVIRONMENTAL PROBLEMS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 167-177. 1969. *WR 137: 6*
[Dow Chemical Co., Midland, Mich.]

MacCarter, Donald L., James R. Koplin, and Douglas S. MacCarter. PESTICIDES AND REPRODUCTIVE FAILURE IN THE OSPREY. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 18-24. 1969. *WR 137: 6*
[Univ. Mont. Biol. Sta., Bigfork.]

Martin, William E. ORGANOCHLORINE INSECTICIDE RESIDUES IN STARLINGS. *Pesticides Monitoring J.* 3(2): 102-114, 1 fig. Sept. 1969. *WR 137: 6*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Abstract: As part of the National Pesticide Monitoring Program, starlings *(Sturnus vulgaris)* were collected from 128 sampling sites throughout the contiguous United States. In most cases, three collections were made at each sampling site. Residue analyses for the persistent organochlorine insecticides were made at a private laboratory under contract with the Bureau of Sport Fisheries and Wildlife. DDT and its metabolites

and dieldrin were found in all samples. Other residues, in order of frequency, were heptachlor epoxide, lindane, and BHC. Higher averaged residues of DDT and its metabolites and/or dieldrin were found in the southeastern United States; southern New Mexico, Arizona and California; eastern Utah; and the Willamette River drainage of Oregon.

Menzie, Calvin M. METABOLISM OF PESTICIDES. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 127. 487 p., illus. July 1969. *WR 137: 7*
The metabolism and decomposition of nearly 300 pesticides are described and illustrated. An updating of no. 96 of this series which was published in 1966.

Neave, David J., and Bruce S. Wright. THE EFFECTS OF WEATHER AND DDT SPRAYING ON A RUFFED GROUSE POPULATION. *J. Wildl. Mgmt.* 33(4): 1015-1020, 4 figs. Oct. 1969. *WR 137: 7*
[Alberta Fish & Wildl. Div., Edmonton, Canada.] Abstract: A study of population dynamics illustrated the effect of temperature and pesticide spraying on a ruffed grouse *(Bonasa umbellus)* population to central New Brunswick. May and June temperatures were related to the date of nest initiation, to a partially developed egg loss, to fall age ratios and to annual kill fluctuations. A synergistic effect of chemical spraying with DDT (in oil at the rates of 0.5 lb/0.7 gal/acre or 0.25 lb/0.5 gal/acre) and temperature is suggested in the partially developed egg loss. Spraying was also correlated with immature survival as significant differences were found in June brood sizes in sprayed and unsprayed areas and in fall age ratios, suggesting complete and partial brood losses.

Radwan, M. A. TMTD WILD MAMMAL REPELLENT: REVIEW AND CURRENT STATUS. *Forest Sci.* 15(4): 439-445. Dec. 1969. *WR 137: 7*
[Pacific Northwest Forest & Range Expt. Sta., Olympia, Wash.] Abstract: TMTD properties, assay methods, and use as a repellent against wild mammals are reviewed. The review suggests that TMTD is a very useful animal repellent, although further research is needed.

Reichel, William L., Eugene Cromartie, Thair G. Lamont, Bernard M. Mulhern, and Richard M. Prouty. PESTICIDE RESIDUES IN EAGLES. *Pesticides Monitoring J.* 3(3): 142-144. Dec. 1969. *WR 137: 7*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Bald and golden eagles found sick or dead in 18 States and Canada during 1964-1965 were analyzed for pesticide residues. Residues in bald eagles were considerably higher than in golden eagles. Residues of DDE, DDD, and dieldrin were detected in all samples of bald eagle carcasses; other compounds found less frequently were heptachlor epoxide, endrin, and DCBP, a metabolite of DDT. DDE was detected in all samples of golden eagle carcasses; DDD, DDT, dieldrin, and heptachlor epoxide were detected less frequently.

Sherburne, J. A., and J. B. Dimond. DDT PERSISTENCE IN WILD HARES AND MINK. *J. Wildl. Mgmt.* 33(4): 944-948, 1 fig. Oct. 1969. *WR 137: 7*
[Cornell Univ., Ithaca, N.Y.] Abstract: Residue data in wild hares *(Lepus americanus)* and mink *(Mustela vison)* following light applications of DDT to the forest are presented. Residues of from 0.5 to 2.6 ppm DDT and its metabolites are shown to persist in mink up to 9 years after a single application of 1 lb/acre. Results of analyses of adult hares and hare fetuses show low residue levels throughout 10 years following spraying that are not significantly different *($P<0.05$)* from levels found in hares from untreated forests. Patterns of DDT residue levels and persistence shown for these species are compared with similar patterns shown for other mammalian herbivores and predators.

Stickel, L., and W. Stickel. DISTRIBUTION OF DDT RESIDUES IN TISSUES OF BIRDS IN RELATION TO MORTALITY, BODY CONDITION, AND TIME. *Industrial Medicine & Surgery* 38(3): 44-53, 4 figs. Mar. 1969. *WR 137: 7*
[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: In spite of wide distribution of DDT in tissues of wild vertebrates, little is understood of its significance. A controlled study is here evaluated. Clearcut differences between

concentrations of DDT plus DDD in brains of dead birds and in brains of equally exposed survivors provided a basis for diagnosis of DDT poisoning. Among cowbirds used in this study, heavier birds survived longest, on a DDT dosage on which all succumbed within 11 days. Carcass residues of DDT were lower in dead birds than in survivors that had been on dosage for the same lengths of time. Carcasses of survivors contained more than twice the DDT in dead birds, suggesting storage without metabolism as a protective mechanism.

Wastler, T. A. POLLUTION IN THE ESTUARINE ZONE. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 96-102. 1969. *WR 137: 8*
[Federal Water Pollution Control Admin., Washington, D.C.]

WILDLIFE--PARASITES & DISEASES

Cunningham, M. P. TRYPANOSOMIASIS IN AFRICAN WILD ANIMALS. *East African Agr. & Forestry J.* 33(spec. issue): 264-265. June 1968. *WR 137: 8*
[FAO, P.O. Kabete, Kenya.]

Nosek, J., M. Lichard, and M. Sztankay. THE ECOLOGY OF TICKS IN THE TRIBEČ AND HRONSKÝ INOVEC MOUNTAINS. *Bull. World Health Org.* 36(suppl. 1): 49-59. 1967. [From Auk 86(4), 1969.] *WR 137: 8*

Plowright, W. INTER-RELATIONSHIPS BETWEEN VIRUS INFECTIONS OF GAME AND DOMESTIC ANIMALS. *East African Agr. & Forestry J.* 33(spec. issue): 260-263. June 1968. *WR 137: 8*
[East African Vet. Res. Organization, P.O. Kabete, Kenya.]

Sachs, R., and J. G. Debbie. A FIELD GUIDE TO THE RECORDING OF PARASITIC INFESTATION OF GAME ANIMALS. *East African Wildl. J.* 7: 27-37, 1 fig. Aug. 1969. *WR 137: 8*
[Univ. Coll., Nairobi, Kenya.] Summary: The importance of a survey of parasites in various game areas in East Africa is outlined both from the point of view of understanding the ecosystem and of exploiting its productivity. The commonly-encountered parasites are described and their normal locations in the host are given. Standard ways of classifying and assessing the degree of infestation by these major parasites are suggested, and the most appropriate manner of preserving specimens for subsequent examination is noted. A check-sheet for the recording of parasites in a post-mortem examination of game animals is included. Such a check-sheet, completed as suggested, together with adequate well-labelled collections, should be of great value in building up a general picture of the incidence and degree of parasitic infestation of various host animals in East African game areas.

Spinage, C. A. QUANTITATIVE ASSESSMENT OF ECTOPARASITES. *East African Wildl. J.* 7: 169-171. Aug. 1969. *WR 137: 8*
[East Hanney, Wantage, Berkshire, England.]

WILDLIFE--BIOMETRICS

Jennrich, R. I., and F. B. Turner. MEASUREMENT OF NONCIRCULAR HOME RANGE (TERRESTRIAL VERTEBRATES). *J. Theor. Biol.* 22(2): 227-237, illus. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 8*
[Univ. Calif., Los Angeles.]

WILDLIFE--TECHNIQUES

Labisky, Ronald F. NIGHTLIGHTING: ITS USE IN CAPTURING PHEASANTS, PRAIRIE CHICKENS, BOBWHITES, AND COTTONTAILS. *Ill. Nat. Hist. Surv. Biol. Notes* no. 62. 12 p., 8 figs. Oct. 1968. *WR 137: 9*
[Ill. Nat. Hist. Surv., Urbana.] Two men working with a floodlight-mounted vehicle, nets, and spotlights can effectively capture pheasants and bobwhite quail. Cottontails and prairie chickens are less susceptible to capture by nightlighting.

Patton, David R., Robert T. Dickie, Erwin L. Boeker, and Virgil E. Scott. A TRANSMITTER FOR TRACKING WILDLIFE. *US Forest Serv. Res. Note RM-114.* p. 1-4, 5 figs. 1968. *WR 137: 9*
[Ariz. State Univ., Tempe.] Abstract: Schematics are presented for a transmitter with an amplifier stage to increase receiving distance. Weight of the transmitter with one battery is 2 ounces, maximum battery life is 45 days, and maximum receiving distance is 2.5 miles.

Petrides, George A. THE USE OF 51-CHROMIUM IN THE DETERMINATION OF ENERGY-FLOW AND OTHER DIGESTIVE CHARACTERISTICS IN ANIMALS. *Proc. Symp. Recent Adv. Trop. Ecol.* p. 25-31, 1 fig. 1969. *WR 137: 9*
[Mich. State Univ., East Lansing.] Radioactive chromium is a relatively safe material to work with as it tends not to be metabolically involved either in study animals or humans. It is quickly excreted after being ingested and is readily detected with suitable instruments.

Poulter, Thomas C. SONAR OF PENGUINS AND FUR SEALS. *Proc. Calif. Acad. Sci.* 36(13): 363-380. Apr. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 9*

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Anell, Bengt. RUNNING DOWN AND DRIVING OF GAME IN NORTH AMERICA. *Studia Ethnogr. Upsaliensia* 30: 1-129. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 9*

Berry, L. PROBLEMS OF LAND USE PLANNING. *East African Agr. & Forestry J.* 33 (spec. issue): 46-50, 1 fig. June 1968. *WR 137: 9*
[Univ. Coll., Dar es Salaam, Tanzania.]

Boyd, J. M. TOWARDS A GRAND PLAN FOR THE MANAGEMENT OF WILDLIFE IN EAST AFRICA. *East African Agr. & Forestry J.* 33(spec. issue): 178-184. June 1968. *WR 137: 9*
[Nature Conservancy, Edinburgh, Scotland.]

Clarke, C. H. D. WILDLIFE IN MULTIPLE USE OF LAND. *East African Agr. & Forestry J.* 33(spec. issue): 206-208. June 1968. *WR 137: 9*
[Ontario Dept. Lands & Forests, Toronto, Canada.]

Denney, R. N. THE CASE FOR INTENSIVE WILDLIFE MANAGEMENT. *East African Agr. & Forestry J.* 33(spec. issue): 118-132, 1 fig. June 1968. *WR 137: 9*
[U.N.D.P./F.A.O., Range Mgmt., Nairobi, Kenya.]

Giles, Robert H., Jr., and Robert F. Scott. A SYSTEMS APPROACH TO REFUGE MANAGEMENT. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 103-115, 3 figs. 1969. *WR 137: 9*
[Va. Polytechnic Inst., Blacksburg.]

Hendee, John C. APPRECIATIVE VERSUS CONSUMPTIVE USES OF WILDLIFE REFUGES: STUDIES OF WHO GETS WHAT AND TRENDS IN USE. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 252-264. 1969. *WR 137: 9*
[Pacific NW Forest & Range Expt. Sta., Seattle, Wash.] Competition between appreciative and consumptive uses of wildlife refuges will greatly increase in the years ahead. Participation in appreciative types of recreation is predominantly by highly educated urbanites and is growing rapidly. Hunting and, to a

lesser degree, fishing are declining but are participated in by ruralities, more representative of the general population in terms of education and other social class indicators. All types of outdoor recreation, including the foregoing, are underrepresented by minority groups.--From concl.

Pratt, D. J. CRITERIA IN LAND USE PLANNING. *East African Agr. & Forestry J.* 33(spec. issue): 42-45. June 1968. *WR 137: 10*
[Ministry Agr. & Animal Husbandry, P.O. Box 30028, Nairobi, Kenya.]

Procter, J. FORESTRY AND WILDLIFE IN LAND USE PLANNING IN TANGANYIKA. *East African Agr. & Forestry J.* 33(spec. issue): 63-68. June 1968. *WR 137: 10*
[Forest Div., P.O. Box 95, Lushoto, Tanzania.]

Rafi, Mohammad. WILDLIFE MANAGEMENT IN SOUTH WESTERN REGIONS OF WEST PAKISTAN. *Pak. J. Forest* 18(3): 301-305. 1968. [From Biol. Abstr. 50(24), 1969.] *WR 137: 10*

Riney, T. CRITERIA FOR LAND USE PLANNING. *East African Agr. & Forestry J.* 33(spec. issue): 34-37. June 1968. *WR 137: 10*
[FAO, Rome, Italy.]

Ruhweza, S. GAME-MANAGEMENT PRACTICES IN UGANDA. *East African Agr. & Forestry J.* 33(spec. issue): 275-276. June 1968. *WR 137: 10*
[Game Dept., P.O. Box 4, Entebbe, Uganda.]

Steel, W. S. THE TECHNOLOGY OF WILDLIFE MANAGEMENT GAME CROPPING IN THE LUANGWA VALLEY, ZAMBIA. *East African Agr. & Forestry J.* 33(spec. issue): 266-270. June 1968. *WR 137: 10*
[Game Dept., P.O. Box 55, Lusaka, Zambia.]

Tackle, D. MULTIPLE-USE PLANNING, GRAZING-FEE ASSESSMENT, FORAGE ALLOCATION AND STOCKING CONTROL--U.S. FOREST SERVICE METHODS. *East African Agr. & Forestry J.* 33(spec. issue): 51-58, 2 figs. June 1968. *WR 137: 10*
[Forest Serv., Portland, Oreg.]

Tennison, H. L. MANAGEMENT OF HUNTING IN EAST AFRICA. *East African Agr. & Forestry J.* 33(spec. issue): 277-278. June 1968. *WR 137: 10*
[P.O. Box 1378, Fort Worth, Texas.]

Wheater, R. J. LAND USE PROPOSALS FOR MURCHISON FALLS NATIONAL PARK AND SURROUNDING AREA. *East African Agr. & Forestry J.* 33(spec. issue): 19-22. June 1968. *WR 137: 10*
[Uganda Natl. Parks, Murchison Falls, Masindi, Uganda.]

Whitaker, Eugene A. THE SCS IN WILDLIFE MANAGEMENT. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 72-80. 1969. *WR 137: 10*
[SCS, Sacramento, Calif.] Wildlife plantings, waterfowl clubs and development of upland game habitat are some of the services rendered by the Soil Conservation Service to private landowners.

Yeager, Lee E., Robert L. Hoover, and Margaret L. Stumpf, editors. COLORADO GAME RESEARCH REVIEW 1968. *Game Res. Div., Colo. Dept. Game, Fish & Parks.* viii + 36 p., 40 figs. June 1969. Price $1.50. *WR 137: 10*
Upland game bird investigations, duck and geese surveys, and research on deer, elk, bighorn sheep and mountain goats are included in the report.

Zuberi, H. UNESCO AND WILDLIFE CONSERVATION. *East African Agr. & Forestry J.* 33(spec. issue): 251-252. June 1968. *WR 137: 10*
[UNESCO, P.O. Box 30592, Nairobi, Kenya.]

WILDLIFE--HUNTING AREAS & PROBLEMS

Achieng, A. P. THE OLAMBWE VALLEY / THE PROBLEM OF MULTIPLE LAND USE. *East African Agr. & Forestry J.* 33(spec. issue): 8-10. June 1968. *WR 137: 11*
[Ministry Tourism & Wildl., P.O. Box 30027, Nairobi, Kenya.]

Durell, James S. HUNTER-LANDOWNER RELATIONSHIPS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 179-185. 1969. *WR 137: 11*
[Dept. Fish & Wildl. Resources, Frankfort, Ky.]

James, George A., Harold K. Cordell, Frank B. Barick, and Robert L. Downing. SMALL-GAME HUNTING ON WESTERN NORTH CAROLINA WILDLIFE MANAGEMENT AREAS. PART 1. CHARACTERISTICS OF HUNTERS. *Wildl. in N.C.* 33(10): 8-10, 11 figs. Oct. 1969. *WR 137: 11*
[SE Forest Expt. Sta., Asheville, N.C.] "Information concerning the socio-economic characteristics of those who hunted small game on wildlife management areas in western North Carolina during 1964 and 1965."

James, George A., Harold K. Cordell, Frank B. Barick, and Robert L. Downing. SMALL-GAME HUNTING ON WESTERN NORTH CAROLINA WILDLIFE MANAGEMENT AREAS. PART 2. IMPORTANCE AND USE OF FOREST ROADS AND TRAILS. *Wildl. in N.C.* 33(11): 10-12, [6] figs. Nov. 1969. *WR 137: 11*
[SE Forest Expt. Sta., Asheville, N.C.] Hunter access was considerably increased by the use of trails and roads. Most hunters left the developed access to hunt interior areas, thus distributing hunting pressure.

Lampio, Teppo. MILLION METSÄSTYSLIPUT LUNASTETAAN. [PURCHASE OF FINNISH LICENCES IN 1966.] *Suomen Riista* 21: 60-66, 2 figs. 1969. In Finnish with English summ. *WR 137: 11*

Lampio, Teppo. ULKOMAISET METSÄSTÄJÄT SUOMESSA 1966. [FOREIGN HUNTERS IN FINLAND IN 1966.] *Suomen Riista* 21: 22-26. 1969. In Finnish with English summ. *WR 137: 11*

Saibull, S. A. ole. NGORONGORO CONSERVATION AREA. *East African Agr. & Forestry J.* 33(spec. issue): 11-18, 4 figs. June 1968. *WR 137: 11*
[P.O. Box 6000, Ngorongoro Crater, Tanzania.]

Stoddard, Charles H., and Albert M. Day. PRIVATE LANDS FOR PUBLIC RECREATION: IS THERE A SOLUTION? *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 186-196. 1969. *WR 137: 11*
[Wolf Springs Forest, Minong, Wis.]

Wilder, Edwin H. WALKING-TRAIL DEVELOPMENTS FOR HUNTERS ON THE NICOLET NATIONAL FOREST. *J. Wildl. Mgmt.* 33(4): 762-768. Oct. 1969. *WR 137: 11*
[Nicolet Natl. Forest, Rhinelander, Wis.] Abstract: Five walking-trail units (9 to 40 miles per unit) were developed on the Nicolet National Forest in northeastern Wisconsin between 1962 and 1968. Although designed primarily for ruffed grouse *(Bonasa umbellus)* hunters, other uses, by snowmobiles, hikers, and deer hunters, emphasize multiple-use values of trail developments and the importance of their coordination with other National Forest activities. Walking-trail development included construction and maintenance of trails, forest openings and other habitat, parking areas, gates, footpath markers, signs, maps, and scenic overlooks. Public response and hunting results were favorable.

WILDLIFE--ECONOMIC & OTHER VALUES

Brown, G., and J. A. Crutchfield. A MONEY-FLOWS APPROACH TO INVESTMENT IN GAME MANAGEMENT. *East African Agr. & Forestry J.* 33(spec. issue): 78-83. June 1968. *WR 137: 11*
[Univ. Wash., Seattle.]

Clarke, R., and F. Mitchell. THE ECONOMIC VALUE OF HUNTING AND OUTFITTING IN EAST AFRICA. *East African Agr. & Forestry J.* 33(spec. issue): 89-97. June 1968. *WR 137: 12*
[Univ. Coll., Nairobi, Kenya.]

Davis, R. K. THE CRITERIA FOR RATIONAL LAND USE / A PROBLEM IN ECONOMICS. *East African Agr. & Forestry J.* 33(spec. issue): 38-41. June 1968. *WR 137: 12*
[Ministry Tourism & Wildl., P.O. Box 30027, Nairobi, Kenya.]

Mitchell, F. THE ECONOMIC VALUE OF WILDLIFE VIEWING AS A FORM OF LAND USE. *East African Agr. & Forestry J.* 33(spec. issue): 98-103. June 1968. *WR 137: 12*
[Univ. Coll., Nairobi, Kenya.]

Pearse, Peter H., and Gary K. Bowden. ECONOMIC EVALUATION OF RECREATIONAL RESOURCES: PROBLEMS AND PROSPECTS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 283-293. 1969. *WR 137: 12*
[Univ. British Columbia, Vancouver, Canada.]

Reinwald, H., and P. Hemingway. SOME ECONOMIC CONSIDERATIONS IN GAME CROPPING FOR EXPORT. *East African Agr. & Forestry J.* 33(spec. issue): 104-109. June 1968. *WR 137: 12*
[Coll. African Wildl. Mgmt., Mweka, Tanzania.]

Stewart, G. F., and W. W. Sadler. TECHNOLOGICAL AND PUBLIC HEALTH PROBLEMS ASSOCIATED WITH COMMERCIAL UTILIZATION OF GAME. *East African Agr. & Forestry J.* 33(spec. issue): 271-274. June 1968. *WR 137: 12*
[Univ. Calif., Davis.]

Weeden, R. B. ECONOMIC EVALUATION OF RECREATIONAL RESOURCES: PROBLEMS AND PROSPECTS--A REACTION. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 293-297. 1969. *WR 137: 12*
[Alaska Dept. Fish & Game, Fairbanks.]

Williamson, Lonnie Leroy. A STUDY OF POTENTIAL GAME ANIMAL UTILIZATION AS AN EMERGENCY FOOD SUPPLY DURING NUCLEAR DISASTER RECOVERY. *M.S. thesis, Univ. Ga.* iv + 29 p. May 1969. *WR 137: 12*
The nationwide distribution and potential density of wild animals, in contrast to the centralized production of domestic livestock, makes this renewable natural resource an invaluable emergency food stockpile. This attribute greatly augments the currently existing recreational, economic, esthetic, biological, and scientific qualities of wildlife.--From summ.

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Black, Hugh C., Edward J. Dimock II, Wendell E. Dodge, and William H. Lawrence. SURVEY OF ANIMAL DAMAGE ON FOREST PLANTATIONS IN OREGON AND WASHINGTON. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 388-408, 5 figs. 1969. *WR 137: 12*
[Oreg. State Univ., Corvallis.] As determined by annual examinations, animals damaged seedlings on all plots. Browsing and clipping of stems were the principal causes of seedling injury. Cutting of roots, budding, barking, trampling, pulling seedlings from the ground, and covering seedlings with soil were noted. Browsing by deer was the most common source of animal damage on all plots. Animals that injured seedlings, ranked by frequency of damage in 1968, were big game, hares and rabbits, grouse, mountain beavers, pocket gophers, domestic stock, porcupines, microtine rodents, and moles.--From summ.

Brown, D. W. J. GAME CONTROL IN KENYA. *East African Agr. & Forestry J.* 33 (spec. issue): 209-212. June 1968. *WR 137: 12*
[Game Dept., P.O. Box 241, Nairobi, Kenya.]

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL--Continued

Caslick, J. W., and W. R. Eadie. INEXPENSIVE BAIT STATIONS FOR MOUSE CONTROL IN TREE PLANTINGS. *Tree Planters' Notes* 20(1): 6. Spring 1969. [From Bibliog. Agr. 33(10), 1969.] *WR 137: 13*

Nicholson, B. D. OBSERVATIONS ON THE ELEPHANT PROBLEM IN SOUTH-EAST TANGANYIKA. *East African Agr. & Forestry J.* 33(spec. issue): 217-220. June 1968. *WR 137: 13*
[Game Dept., P.O. Box 2076, Nairobi, Kenya.]

WILDLIFE--REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

de Vos, Antoon, and Tecwyn Jones, editors. PROCEEDINGS OF THE SYMPOSIUM ON WILDLIFE MANAGEMENT AND LAND USE / NAIROBI, 5-8 JULY 1967. *East African Agr. & Forestry J.* 33(spec. issue). 297 p. June 1968. Price 10 shillings. *WR 137: 13*
Includes 50 papers and related discussion grouped in six sections: elements of land use planning, economic value of wildlife programing technology of wildlife management, wildlife conservation education, management to meet utilization requirements, and reviews and recommendations. Many of these papers are listed in this issue of *WR*.

Maguire, H. F. SMALL GAME HARVEST UP. [*N.Y.*] *Conservationist* 24(3): 6-7, 3 figs. Dec.-Jan. 1969-70. *WR 137: 13*
[N.Y. Conserv. Dept., Albany.] Rabbit, squirrel, pheasant, and waterfowl showed an increase over last year's harvest. Turkey, grouse, and varying hare take declined from 1967-68 levels.

Yoakum, Jim, editor. CALIFORNIA-NEVADA SECTION / THE WILDLIFE SOCIETY 1969 TRANSACTIONS / A COMPILATION OF FORMAL PAPERS PRESENTED AT THE 16TH ANNUAL MEETING OF THE CALIFORNIA-NEVADA SECTION OF THE WILDLIFE SOCIETY, HELD FEBRUARY 28 - MARCH 1, 1969, AT BERKELEY, CALIFORNIA. 127 p. 1969. Available at $2.00 from Calif.-Nev. Sec., Wildl. Soc., 300 Booth St., Reno, Nev. 89502. *WR 137: 13*
Contains 16 papers, most of which are listed separately in this issue of *WR*.

WETLANDS & WILDLIFE

Adams, David A. FEDERAL ACTIVITIES IN THE COASTAL ZONE. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 87-96. 1969. *WR 137: 13*
Activities that appear to be important to the fish and wildlife manager.

Arend, Philip H. EXPLOSIVES IN MARSH MANAGEMENT. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 44-52. 1969. *WR 137: 13*
[Wildl. Assoc., Novato, Calif.] Farmex ditching powder (40% gelatine, propagating dynamite) and explosive nitro-carbo-nitrate granules are best suited for blowing ditches and potholes in waterfowl marshes.--From abstr.

Aus, Philip B. WHAT IS HAPPENING TO THE WETLANDS? *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 315-323. 1969. *WR 137: 13*
[Bur. Sport Fisheries & Wildl., Devils Lake, N. Dak.] "Wetlands today are faced with perhaps the greatest threat since settlement of this continent. Each wetland drained, filled, or polluted comes from a greatly reduced natural resource base. Individual wetland types and the total natural wetland resource are rapidly approaching a stage where they can be placed in a remnant or rare category."

Harmon, Keith W. NORTH DAKOTA'S WATER BANK PROPOSAL. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 323-331. 1969. *WR 137: 13*
[N. Dak. State Univ., Fargo.]

McBroom, James T. MULTIPLE USE OF THE COASTAL ZONE. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 80-86. 1969. *WR 137: 14*

Meeks, Robert L. THE EFFECT OF DRAWDOWN DATE ON WETLAND PLANT SUCCESSION. *J. Wildl. Mgmt.* 33(4): 817-821. Oct. 1969. *WR 137: 14*

[Winous Point Club, Port Clinton, Ohio.] Abstract: A 7-year study was begun on the Winous Point Shooting Club in 1956 to determine the effect of drawdown date on plant succession. An 80-acre marsh was diked into four units, one of which was drained yearly in mid-March, one in mid-April, one in mid-May, and one in mid-June. All the units were reflooded during September. Plant succession followed the same general trend on all units, going from semi-aquatic species to predominantly annual weeds. Fewer years were required with early drawdowns for annual weeds to replace semi-aquatic species. The May drawdown unit had the best plant associations for wildlife after 7 seasons. Draining during mid-to-late May should allow muskrats *(Ondatra zibethica)* to raise two litters without interruption, and not interfere with duck nesting.

Stuart, Russell W. STATE PROBLEMS IN THE MULTI-PURPOSE WATER ACT. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 352-360, 1 fig. 1969. *WR 137: 14*

[N. Dak. Game & Fish Dept., Bismarck.] "Deals with the problems that states are having and will be experiencing with the implementation of Public Law 89-72 in large federally sponsored water projects."

RANGELAND & WILDLIFE

Biswell, Harold H. PRESCRIBED BURNING FOR WILDLIFE IN CALIFORNIA BRUSHLANDS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 438-446. 1969. *WR 137: 14*

[Univ. Calif., Berkeley.] Studies of prescribed burning in chamise chaparral and in woodland and woodland-grass chaparral.

Casebeer, R. L. APPLYING WILDLIFE MANAGEMENT TO PASTORAL LAND MANAGEMENT. *East African Agr. & Forestry J.* 33(spec. issue): 133-139. June 1968. *WR 137: 14*

[U.N.D.P./F.A.O., Range Mgmt., Nairobi, Kenya.]

Leege, Thomas A. BURNING SERAL BRUSH RANGES FOR BIG GAME IN NORTHERN IDAHO. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 429-438, 1 fig. 1969. *WR 137: 14*

[Idaho Fish & Game Dept., Kamiah.] Summary: Large wildfires in the early 1900's created thousands of acres of browse-laden winter ranges where conifers formerly dominated in northern Idaho and adjacent areas in Montana and Washington. Big game multiplied and thrived until natural plant succession reduced carrying capacity. A cooperative state-federal research project began investigating the use of prescribed burning to set back succession on winter ranges in 1965. Initial results were encouraging as tall shrubs provided abundant sprouts within browsing reach and numerous redstem ceanothus seedlings invaded the burns. Browse nutrients were higher in the new growth which followed the burning treatments and palatability also increased. Erosion has been minimal because of the soil being moist when burning was done. The use of prescribed burning as a range rehabilitation technique is being accepted, and burned acreages have increased from 1016 in 1965 to 4652 in 1968. The goal is 7700 acres for 1969.

Longhurst, William M., and Harold F. Heady, editors. REPORT OF A SYMPOSIUM ON EAST AFRICAN RANGE PROBLEMS / VILLA SERBELLONI, LAKE COMO, ITALY / JUNE 24-28, 1968. *Rockefeller Foundation.* v + 119 p. [1968.] *WR 137: 14*

[Univ. Calif., Hopland Field Sta., Hopland.] Includes the following papers related to wildlife: *Wildlife conservation and utilization on Kenya's rangelands*, J. P. Achieng; *Rangeland surveys in East Africa with special reference to wildlife resources*, J. Morton Boyd; *Some economic aspects of range management in Kenya*, Robert K. Davis; *East African rangelands*, O. Starnes; and *The status and role of rangelands in Uganda*, D. Thornton.

Pearse, P. H. AN ECONOMIC APPROACH TO THE PROBLEM OF RANGE COMPETITION BETWEEN CATTLE AND GAME. *East African Agr. & Forestry J.* 33(spec. issue): 84-88, [2] figs. June 1968. *WR 137: 15*
[Univ. British Columbia, Vancouver, Canada.]

Pederson, Rudy J., and James Henson. MANAGING RANGELAND FOR WILDLIFE AND LIVESTOCK. *Soil Conserv.* 35(6): 123-124, illus. Jan. 1970. *WR 137: 15*
[SCS, San Angelo, Texas.] Deer prefer long, narrow pastures stocked at varying rates with different kinds and combinations of livestock.

FORESTLAND--MANAGEMENT FOR & DAMAGE BY WILDLIFE

Clark, K. THE RECONCILIATION OF WILDLIFE CONSERVATION WITH FORESTRY. *East African Agr. & Forestry J.* 33(spec. issue): 213-216. June 1968. *WR 137: 15*
[Forest Dept., P.O. Box 30513, Nairobi, Kenya.]

Cook, Jack L. IMPROVING GAME RANGE WITH THE DEER-DOZER. *Mich. Dept. Nat. Resources Res. & Development Rept.* no. 167. 11 p. 27 May 1969. *WR 137: 15*
The heavy bulldozer with a tree-cutting blade has shown promise as a method of clear-cutting poor quality stands of pole timber to renovate game range. Most studies have shown that good sprouting results from tree dozer clear-cuttings and the operating costs are competitive with other habitat manipulation techniques.--From summ.

Cushwa, Charles T. WILDLIFE FOOD PLANTS ON CHOPPED AREAS IN THE PIEDMONT OF SOUTH CAROLINA. *USDA Forest Serv. Res. Note SE-119.* [4 p.]. Aug. 1969. *WR 137: 15*
Abstract: Chopping clearcut pine stands to prepare pine seedbeds is becoming a common practice in the Piedmont of South Carolina, but the effects of such chopping on wildlife food plants have not previously been reported. Two areas in a loblolly pine stand on the Sumter National Forest were clearcut and chopped, one in 1965 and the other in 1966, and samples were taken of the herbaceous plants that grew up on the areas. By 1967, the chopped areas had more than twice as many legumes and other game-bird food plants as did an uncut, unchopped area nearby.

Cushwa, Charles T., and Robert E. Martin. THE STATUS OF PRESCRIBED BURNING FOR WILDLIFE MANAGEMENT IN THE SOUTHEAST. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 419-428, 3 figs. 1969. *WR 137: 15*
[North Central Forest Expt. Sta., St. Paul, Minn.] Summary: Vegetational changes following forest fires in the southeastern United States affect the habitat of all species of wildlife, some detrimentally and some beneficially. We as researchers and managers must better understand the effects of different kinds of fire on the wildlife populations and habitat in all three physiographic provinces of the Southeast in order to wisely use this management tool. More work is needed to determine the effects of fire on various species of plants and animals, and to determine how these effects relate to the various fire parameters discussed.

Engle, J. W., Jr. WILDLIFE AND TIMBER MANAGEMENT / OAK-PINE AND OAK-HICKORY FOREST. *Va. Wildl.* 30(11): 16-18, illus. Nov. 1969. *WR 137: 15*
Forest management applied to the two forest types from which the harvest of 80% of the deer, 85% of the turkey, and 98% of the bear in Va. occurs.

Graber, Raymond E. SEED LOSSES TO SMALL MAMMALS AFTER FALL SOWING OF PINE SEED. *USDA Forest Serv. Res. Pap. NE-135.* 16 p., illus. 1969. *WR 137: 15*
[NE Forest Expt. Sta., Upper Darby, Pa.] Abstract: Four concentrations of endrin were used in chemical coatings to protect white pine and red pine seeds from predation by birds and rodents. Major seed losses occurred, due primarily to small mammals, especially mice. Seed placement was the key: only 3 percent of the buried seeds were lost, while more than half of the seeds exposed on the soil surface were lost.

Halls, Lowell K., and E. A. Epps, Jr. BROWSE QUALITY INFLUENCED BY TREE OVERSTORY IN THE SOUTH. *J. Wildl. Mgmt.* 33(4): 1028-1031. Oct. 1969. *WR 137: 16*
[Southern Forest Expt. Sta., Nacogdoches, Texas.] Abstract: Sampled browse plants grown in the open usually contained more crude protein and phosphorus but less crude fiber and calcium than plants beneath a stand of pines. Leaves contained more crude protein, phosphorus, and calcium than stems, but were lower in crude fiber. Interactions among species, plant parts, and locations were significant.

Harlow, Richard F. BETTER DEER HERDS--AND BETTER TIMBER. *Forest Farmer* 26(6): 10, 23, 3 [figs.]. Mar. 1967. *WR 137: 16*
[SE Forest Expt. Sta., Asheville, N.C.] "Preliminary findings indicate that clear cutting greatly improves the food supply of deer as well as the timber regeneration."

Jacobs, Rodney D. GROWTH AND DEVELOPMENT OF DEER-BROWSED SUGAR MAPLE SEEDLINGS. *J. Forestry* 67(12): 870-874, 4 figs. Dec. 1969. *WR 137: 16*
[North Central Forest Expt. Sta., Northern Hardwood Lab., Marquette, Mich.] Abstract: The growth and development of individual sugar maple *(Acer saccharum* Marsh.*)* seedlings in fenced and unfenced quadrats beneath a partially cut stand were measured over a 5-year period. The effect of severe winter browsing on seedlings growing in environments favoring vigorous height growth was silviculturally insignificant. After 5 years, the dominant seedlings in the unfenced quadrats were 1.6 feet shorter because of the amount of leader browsed, but the rate of height growth and seedling density were unaffected; and the minimum stocking above deer reach was 5,000 seedlings per acre. Also, forks and the associated crook and sweep tended to correct naturally. Reasons are suggested for the reports elsewhere of adverse effects of browsing on sugar maple.

Komarek, E. V., Sr., chairman. PROCEEDINGS ANNUAL TALL TIMBERS FIRE ECOLOGY CONFERENCE, 14-15 MARCH 1968, TALLAHASSEE, FLORIDA. *Tall Timbers Res. Sta.* (Tallahassee, Fla.). v + 285 p., illus. 1968. *WR 137: 16*
Includes the following papers: *Burning and tropical American savannas*, John Blydenstein; *Fire ecology in southeastern Australian sclerophyll forests*, G. Ross Cochrane; *Surface fires in northern Ontario*, D. W. Smith; *Fire ecology of the Valdivian rain forest*, E. J. Wilhelm, Jr.; *Fire and wildlife grazing on an African plateau*, Paul C. Lemon; *Heat tolerance of tree seedlings*, A. J. Kayll; *Man, fire and wild cattle in southeast Asia*, Charles H. Wharton; *Lightning and lightning fires as ecological forces*, E. V. Komarek, Sr.; *Some comments concerning the wise use of fire*, Bryant A. Bateman; *Chaparral conversion on the Tonto National Forest*, J. J. Baldwin; *Burning assistance and rural fire protection programs*, H. K. Mikell; *Control burning for deer management in chaparral in California*, Jared H. Hendricks; *Prescribed burning for elk in northern Idaho*, Thomas A. Leege; *Fire in relation to waterfowl habitat of the Delta marshes*, Peter Ward; and *Controlled burning in the management of muskrats and waterfowl in Louisiana coastal marshes*, Carroll J. Perkins.

MAMMALS--GENERAL

Eaton, Randall L. COOPERATIVE HUNTING BY CHEETAHS AND JACKALS AND A THEORY OF DOMESTICATION OF THE DOG. *Mammalia* 33(1): 87-92. 1969. [From Biol. Abstr. 50(23), 1969. In English with French summ.] *WR 137: 16*
[Univ. Mo., Columbia.]

Fisler, George F. MAMMALIAN ORGANIZATIONAL SYSTEMS. *Los Angeles County Mus. Contrib. Sci.* no. 167. 32 p., 1 fig. 30 June 1969. *WR 137: 16*
[San Fernando Valley State Coll., Northridge, Calif.] Abstract: Confusion exists concerning the relationship between the seemingly separate concepts of territory and hierarchy as used in describing mammalian organizational systems. This paper is an attempt to synthesize knowledge of these concepts into a single,

continuous system of behavioral and ecological adaptations based on two ultimate factors that are characteristics of mammals, aggression and site attachment. Organizational systems result from the interaction of these characters and are further refined by proximate factors in mammalian life which include morphological, behavioral, and ecological adaptations. In order to emphasize diversity of organizational systems, within and between the concepts of territory and hierarchy, a possible classification of systems is suggested. Based primarily on individual and group organization, each of these two types is further elaborated into subtypes which are then defined, discussed, and illustrated.

Giles, Robert H., Jr., Charles D. Buffington, and Jerry A. Davis. A TOPOGRAPHIC MODEL OF POPULATION STABILITY. *J. Wildl. Mgmt.* 33(4): 1042-1045, 1 fig. Oct. 1969. *WR 137: 17*
[Va. Polytech. Inst., Blacksburg.] Abstract: The population management model of Quick (1963) is graphed three dimensionally. Examples are given which show the utility of the model of population stability and the relations of life expectancy, sex ratio, and age ratio.

Helminen, Matti. RIISTATILANNE METSÄSTYSKAUSIEN 1966/67 JA 1967/68 PÄÄTTYESSÄ. [RELATIVE ABUNDANCE OF SOME GAME AND FUR SPECIES IN FINLAND AT THE END OF THE 1966/67 AND 1967/68 HUNTING SEASONS.] *Suomen Riista* 21: 116-127, 24 figs. 1969. In Finnish with English summ. *WR 137: 17*

Kavanau, J. L. INFLUENCES OF LIGHT ON ACTIVITY OF THE SMALL MAMMALS, *PEROMYSCUS* SPP., *TAMIAS STRIATUS*, AND *MUSTELA RIXOSA*. *Experientia* (Basel) 25(2): 208-209. 15 Feb. 1969. [From J. Mammal. 50(4), 1969. In English with German summ.] *WR 137: 17*

Leontyeva, M. N. [CAUSES OF AWAKENING OF HIBERNATING ANIMALS.] *Zool. Zhur.* 47(12): 1835-1839. 1968. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 17*

Mambetzhumaev, A. M. [VARIATIONS IN THE POPULATION SIZE AND FOOD RELATIONSHIPS OF UNGULATES AND YELLOW MARMOTS ON BARSA-KELMES ISLAND.] *Uzb. Biol. Zhur.* 13(1): 44-48. 1969. [From Biol. Abstr. 50(21), 1969. In Russian with English summ.] *WR 137: 17*

Spitz, Francois, and Marie-Charlotte Saint-Girons. ETUDE DE LA REPARTITION EN FRANCE DE QUELQUES SORICIDAE ET MICROTINAE PAR L'ANALYSE DES PELOTES DE REJECTION DE *TYTO ALBA*. [STUDY OF THE DISTRIBUTION OF SOME SORICIDAE AND MICROTINAE BY THE ANALYSIS OF REGURGITATED PELLETS OF *TYTO ALBA*.] *Terre & Vie* 116 (3): 246-268. July-Sept. 1969. In French. *WR 137: 17*
[Inst. Natl. Recherche Agr., Jouy-en-Josas, France.]

Vose, Rory N. WIND AS A FACTOR IN THE DISTRIBUTION OF SMALL MAMMALS. *M.A. thesis, Univ. S. Dak.* 26 p. 1965. *WR 137: 17*
Courtesy/ Webster H. Sill, Jr.

MAMMALS--TECHNIQUES

Hanks, J. TECHNIQUES FOR MARKING LARGE AFRICAN MAMMALS. *Puku* no. 5 p. 65-86, 12 [figs.]. 1969. *WR 137: 17*
[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.] Summary: Collars, ear tags, dyes and paints, radio transmitters, lights, branding, ear-punching, mane-clipping, nose tags, tail markers and tusk markers are discussed as methods for marking large African mammals.

Hanks, J. THE USE OF THE NEW HYPODART FOR ANIMAL IMMOBILISATION. *Puku* no. 5. p. 228-231, 1 fig., 1 pl. 1969. *WR 137: 17*
[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.]

MAMMALS--TECHNIQUES--Continued

Howard, Walter E., Steve D. Palmateer, and Rex E. Marsh. A BODY CAPACITOR-OLFACTOMETER FOR SQUIRRELS AND RATS. *J. Mammal.* 50(4): 771-776, 1 fig. Nov. 1969. *WR 137: 18*

[Univ. Calif., Davis.] Abstract: The body capacitor-olfactometer described herein was developed for the purpose of measuring quantitatively the number and duration of odor seeking (primarily food seeking) responses of wild ground squirrels *(Spermophilus* spp.) and rats *(Rattus* spp.) to various olfactory cues presented free of the influence of taste, without the reward of food, and without requiring that these field-caught rodents first be trained to the olfactometer before their responses could be monitored. Species of rodents that weigh less than 250 grams possess a body capacitance too low to activate the sensor units, but there is no upper size limit. We believe that this olfactometer could be adapted for mouse-size rodents if ultrasonic, infrared, or some other type of sensor was employed in place of the body capacitor.

Telfer, Edmund S. TWIG WEIGHT-DIAMETER RELATIONSHIPS FOR BROWSE SPECIES. *J. Wildl. Mgmt.* 33(4): 917-921, 3 figs. Oct. 1969. *WR 137: 18*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Abstract: A close correlation was found between oven-dry weight and basal diameter for twigs of most browse species. Constants for use in a prediction equation are presented for 38 species of northeastern woody plants. Within stated limitations the prediction equations can be used to calculate average twig weights for the Shafer twig-count method for estimating browse utilization.

MAMMALS--FAUNAS & MANUALS

Allouse, Bashir E. A BIBLIOGRAPHY OF THE VERTEBRATE FAUNA OF IRAQ AND NEIGHBOURING COUNTRIES: MAMMALS. *Iraq Nat. Hist. Mus. Publ.* 25: 1-36. Oct. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 18*

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[Univ. Florence, Florence, Italy.]

Banta, Benjamin H., and T. Michael Norris. THE SMALL MAMMAL FAUNA SAMPLED ALONG A TRANSECT OF PRAIRIE IN EL PASO COUNTY, COLORADO, USA, IN 1963 AND 1964. *Wasmann J. Biol.* 26(2): 185-200, illus. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 18*

[Mich. State Univ., East Lansing.]

Carvalho, Cory T. De, and Armando J. Toccheton. MAMIFEROS DO NORDESTE DO PARA, BRASIL. [MAMMALS OF NORTHEASTERN PARA, BRAZIL.] *Rev. Biol. Trop.* 15(2): 215-226. 1967. [From Biol. Abstr. 50(24), 1969. In Portuguese with English summ.] *WR 137: 18*

Dalquest, Walter W., Edward Roth, and Frank Judd. THE MAMMAL FAUNA OF SCHULZE CAVE, EDWARDS COUNTY, TEXAS. *Bull. Fla. State Mus. Biol. Sci.* 13(4): 205-276, illus. 1969. [From Biol. Abstr. 50(22), 1969.] *WR 137: 18*

[Fla. State Mus., Gainesville.]

Everard, C. O. R. SOME SNARES USED IN WESTERN NIGERIA. *Nigerian Field* 33(3): 117-142. July 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 18*

"List of commonly trapped mammals."

Gaisler, Jiří, Dalibor Povolný, Zdeněk Šebek, and František Tenora. FAUNAL AND ECOLOGICAL REVIEW OF MAMMALS OCCURRING IN THE ENVIRONS OF JALAL-ABAD, WITH NOTES ON FURTHER DISCOVERIES OF MAMMALS IN AFGHANISTAN. III. CARNIVORA, LAGOMORPHA. *Zool. Listy* 17(2): 185-189. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 18*

MAMMALS--FAUNAS & MANUALS--Continued

Hoffmeister, Donald F., and Steven W. Carothers. MAMMALS OF FLAGSTAFF, ARIZONA. *Plateau Quart. Mus. N. Ariz.* 41(4): 184-188. 1969. [From Biol. Abstr. 50(23), 1969.] *WR 137: 19*
[Univ. Ill., Urbana.] Fifty-six spp. are found within a 15 mile radius of Flagstaff.

Lidicker, William Z., Jr., and Alan C. Ziegler. REPORT ON A COLLECTION OF MAMMALS FROM EASTERN NEW GUINEA INCLUDING SPECIES KEYS FOR FOURTEEN GENERA. *Univ. Calif. Publ. Zool.* 87: 1-64. 18 Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 19*

Peshev, Ts., and V. Angelova. [INSECTIVORA AND RODENTIA IN THE SOUTHERN PARTS OF BULGARIA.] *God. Sofiiskiya Univ. Biol. Fak. Kn. I Zool. Biokhim. Zhivotn.* 61: 89-98, illus. 1966/1967. [From Biol. Abstr. 50(24), 1969. In Bulgarian with English summ.] *WR 137: 19*

MAMMALS--PARASITES & DISEASES

Constantine, Denny G. TRANSMISSION EXPERIMENTS WITH BAT RABIES ISOLATES: RESPONSES OF CERTAIN CARNIVORA TO RABIES VIRUS ISOLATED FROM ANIMALS INFECTED BY NONBITE ROUTE. *Am. J. Vet. Res.* 27(116): 13-15. Jan. 1966. *WR 137: 19*

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Constantine, Denny G. TRANSMISSION EXPERIMENTS WITH BAT RABIES ISOLATES: BITE TRANSMISSION OF RABIES TO FOXES AND COYOTE BY FREE-TAILED BATS. *Am. J. Vet. Res.* 27(116): 20-23. Jan. 1966. *WR 137: 19*

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Constantine, Denny G., and Gordon C. Solomon. TRANSMISSION EXPERIMENTS WITH BAT RABIES ISOLATES: RESPONSES OF CERTAIN CARNIVORES AND RODENTS TO RABIES VIRUSES FROM FOUR SPECIES OF BATS. *Am. J. Vet. Res.* 29(1): 181-190. Jan. 1968. *WR 137: 19*
"Macrotus waterhousii, Lasiurus cinereus, Lasionycteris noctivagans, and *Eptesicus fuscus."*

Ledger, J. A. THE LICE OF MAMMALS. *Fauna & Flora* 19: 61-65. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 19*

Rail, Chester D., Donald L. Forcum, John R. Wheeler, and Bryan E. Miller. WILD MAMMALS AND FLEAS OF RED BLUFF RANCH, NEW MEXICO. *J. Med. Entomol.* 6(1): 92-94. Jan. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 19*

Schnurrenberger, Paul R., Russell J. Martin, Gavin L. Meerdink, and Norman J. Rose. EPIDEMIOLOGY OF HUMAN EXPOSURE TO RABID ANIMALS IN ILLINOIS. *Public Health Repts.* 84(12): 1078-1084. Dec. 1969. *WR 137: 19*
[Ill. Dept. Public Health, Springfield.] All cases of animal rabies occurring in Illinois from 1963 through 1968 were investigated to determine the number of persons receiving rabies vaccine. There were 856 persons vaccinated because of exposure to 332 of the 1,272 reported rabid animals. Dogs and cats posed the greatest hazard, with 240 persons vaccinated per 100 animal cases in contrast to 13 per 100 rabid skunks.--From summ.

SHREWS, MOLES, BATS

Abelentsev, V. I., I. I. Kolyushev, Yu. I. Krochko, and K. A. Tatarinov. [THE RESULTS OF CHIROPTERA RINGING IN THE UKRAINIAN SSR FOR 1939-1967.] *Vestnik Zool.* (Kiev) 6: 59-64. 1968. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 20*

Buckner, Charles H. THE COMMON SHREW *(SOREX ARANEUS)* AS A PREDATOR OF THE WINTER MOTH *(OPEROPHTERA BRUMATA)* NEAR OXFORD, ENGLAND. *Canadian Entomol.* 101 (4): 370-375. Apr. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 20*

Chase, Julia, and Roderick A. Suthers. VISUAL OBSTACLE AVOIDANCE BY ECHO-LOCATING BATS. *Animal Behaviour* 17(2): 201-207, 1 fig. May 1969. *WR 137: 20*
[Ind. Univ., Bloomington.] Evidence is presented that two species of echo-locating bats, *Carollia perspicillata* and *Phyllostomus hastatus*, while in flight in subdued daylight can visually detect and avoid 30-cm wide strips of white cloth suspended across their flight space. Bats deafened with earplugs avoided the cloth strips significantly better than did individuals that were both deafened and blindfolded. Blindfolding alone did not impair the bat's ability to negotiate these obstacles.--From summ.

Constantine, Denny G., and Bernardo Villa-R. METODOS DE LUCHA CONTRA LOS VAMPIROS TRANSMISORES DE LA RABIA. [METHODS OF CONTROL OF RABIES-TRANSMITTING VAMPIRE BATS.] *Bol. Oficina Sanitaria Panamericana* 53(1): 7-12, 3 figs. July 1962. In Spanish. *WR 137: 20*

Constantine, Denny G. TRAMPA PORTATIL PARA VAMPIROS USADA EN PROGRAMAS DE CAMPAÑA ANTIRRABICA. [PORTABLE VAMPIRE BAT TRAP FOR USE IN RABIES CONTROL PROGRAMS.] *Bol. Oficina Sanitaria Panamericana* 67(1): 39-42, 1 fig. July 1969. In Spanish with French, Portuguese, and English summ. *WR 137: 20*

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[Univ. Ariz., Tucson.]

De Balsac, H. Heim, and R. Vuattoux. *CROCIDURA DOUCETI* H. DE B. ET LE COMPORTEMENT ARBORICOLE DES SORICIDAE. [*CROCIDURA DOUCETI* H. OF B. AND THE TREE BEHAVIOR OF SORICIDAE.] *Mammalia* 33(1): 98-101. 1969. [From Biol. Abstr. 50 (23), 1969. In French with English summ.] *WR 137: 20*
[Lab. Ecol. Trop., Lamto, Ivory Coast.]

Gaisler, Jiří, Dalibor Povolný, Zdeněk Šebek, and František Tenora. FAUNAL AND ECOLOGICAL REVIEW OF MAMMALS OCCURRING IN THE ENVIRONS OF JALAL-ABAD, WITH NOTES ON FURTHER DISCOVERIES OF MAMMALS IN AFGHANISTAN. II. CHIROPTERA. *Zool. Listy* 17(1): 41-48 + 2 pls. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 20*

Hoffmann, Robert S., Donald L. Pattie, and J. Frederick Bell. THE DISTRIBUTION OF SOME MAMMALS IN MONTANA. II. BATS. *J. Mammal.* 50(4): 737-741, 5 figs. Nov. 1969. *WR 137: 20*
[Univ. Kans., Lawrence.] Abstract: The current distributional status of nine species of bats in Montana is reviewed. Specimens of *Myotis thysanodes* constitute first records for the state.

Jones, Gwilym S., Soewito Jososoedarno, and J. Sulianti Saroso. BATS FROM CENTRAL JAVA. *J. Mammal.* 50(4): 835-836. Nov. 1969. *WR 137: 20*
[U.S. Naval Med. Res. Unit No. 2, Box 14, APO San Francisco.]

Kulzer, Erwin. DER WINTERSCHLAF DER FLEDERMÄUSE. [THE HIBERNATION OF BATS.] *Umschau Wiss. Tech.* (Frankfort/Main) 69(7): 195-201. 27 Mar. 1969. [From J. Mammal. 50(4), 1969. In German.] *WR 137: 20*

SHREWS, MOLES, BATS--Continued

LaVal, Richard K. AN EXAMPLE OF UNUSUAL BEHAVIOR AND TEMPERATURE DEPRESSION IN *ARTIBEUS LITURATUS* (PHYLLOSTOMIDAE). *Bat Res. News* 10(4): 42. Oct. 1969. *WR 137: 21*
[Texas A&M Univ., College Station.] The four bats were unable to fly and felt cool to the touch after having been exposed to low (20°C) overnight temperatures. The body temperature of two of the bats had dropped to within 2 to 3°C of ambient temperatures.

Lawrence, M. J. SOME OBSERVATIONS ON NON-VOLANT LOCOMOTION IN VESPERTILIONID BATS. *J. Zool.* 157(3): 309-317, illus. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 21*
[Univ. Coll., London, England.]

Norberg, Ulla Maria. AN ARRANGEMENT GIVING A STIFF LEADING EDGE TO THE HAND WING IN BATS. *J. Mammal.* 50(4): 766-770, 2 figs. Nov. 1969. *WR 137: 21*
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Nussbaum, Ronald A., and Chris Maser. OBSERVATIONS OF *SOREX PALUSTRIS* PREYING ON *DICAMPTODON ENSATUS*. *Murrelet* 50(2): 23-24. May-Aug. 1969. *WR 137: 21*
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Richard, P. B., and A. Vallette Viallard. LE DESMAN DES PYRENEES *(GALEMYS PYRENAICUS)*: PREMIERES NOTES SUR SA BIOLOGIE. [THE PYRENEAN DESMAN *(GALEMYS PYRENAICUS)*: INITIAL NOTES ON ITS BIOLOGY.] *Terre & Vie* 116(3): 225-245, 14 figs. July-Sept. 1969. In French with English summ. *WR 137: 21*
[14 bis, rue d'Assas, Paris, France.]

Röben, Peter. DIE SPITZMÄUSE (SORICIDAE) DER HEIDELBERGER UMGEBUND. [THE SHREWS (SORICIDAE) OF THE ENVIRONS OF HEIDELBERG.] *Säugetierk. Mitteil.* 17(1): 42-62. Feb. 1969. [From J. Mammal. 50(4), 1969. In German with English summ.] *WR 137: 21*

Sawada, Isamu. HELMINTH FAUNA OF BATS IN JAPAN V. *Annot. Zool. Japonenses* 41(4): 168-171. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 21*

Studier, Eugene H., and A. A. Fresquez. CARBON DIOXIDE RETENTION: A MECHANISM OF AMMONIA TOLERANCE IN MAMMALS. *Ecology* 50(3): 492-494, 1 fig. Late Spring 1969. *WR 137: 21*
[N. Mex. Highlands Univ., Las Vegas.] When guano bats *(Tadarida brasiliensis)* inhale ammonia in air mixtures, carbon dioxide is passively retained in sufficient amounts to neutralize alkali excess resulting from increased blood ammonia levels. --From abstr. Courtesy/ Paul A. Stewart.

Studier, Eugene H., and D. J. Howell. HEART RATE OF FEMALE BIG BROWN BATS IN FLIGHT. *J. Mammal.* 50(4): 842-845, 1 fig. Nov. 1969. *WR 137: 21*
[N. Mex. Highlands Univ., Las Vegas.] *"Eptesicus fuscus pallidus."*

Woloszyn, Bronislaw W. BADANIA NIETOPERZY DOLNEGO SLASKA. [INVESTIGATIONS ON BATS OF LOWER SILESIA (POLAND). *Przegl. Zool.* 12(2): 208-220, illus. 1968. [From Biol. Abstr. 50(23), 1969. In Polish.] *WR 137: 21*

RABBITS & PIKAS

Alkon, Philip U. EFFECT OF TYPE OF ROAD ON SUMMER ROADSIDE COUNTS OF COTTONTAILS. *N.Y. Fish & Game J.* 16(1): 111-118. Jan. 1969. *WR 137: 21*
[N.Y. Coop. Wildl. Res. Unit, Ithaca.] Abstract: Roads on two rabbit survey routes in Albany County were classed as secondary or main according to their designation on U.S. Geological Survey maps. Standardized early-morning counts of rabbits for 11 years on one route and nine years on the other were grouped according to the type of road with which they were associated. Statistical analysis, applied to several aspects of the data, indicated that the pattern of variation in peak and total annual counts on the two types of road differed significantly on both routes.

Andrews, Charles Lawrence. PARASITISM AND OTHER DISEASE ENTITIES AMONG SELECTED POPULATIONS OF COTTONTAIL RABBITS *(SYLVILAGUS FLORIDANUS). Ph.D. thesis, Univ. Ga.* x + 185 p., [14 figs.]. May 1969. *WR 137: 22*
Helminth parasite burdens among cottontail rabbits in the Piedmont Province appear to be greater than those in cottontails of the Coastal Plain Province. Parasite burdens appear to be greater in the spring than in the fall within each of the three regions under consideration. Cottontails are capable of harboring large numbers of certain ecto- and endoparasites without exhibiting any outward signs of ill effect. Histopathologic examination of kidney tissues suggests that the cottontail rabbit conceivably represents a major reservoir for one or more serotypes of leptospirae in the Southeast.--From summ. and concl.

Chapman, Joseph A., and B. J. Verts. INTERSPECIFIC AGGRESSIVE BEHAVIOR IN RABBITS. *Murrelet* 50(2): 17-18. May-Aug. 1969. *WR 137: 22*
[Oreg. State Univ., Corvallis.] Observations of aggressive behavior by *Silvilagus floridanus* towards *S. bachmani.*

Fruzinski, B. [CONTRIBUTION TO THE KNOWLEDGE OF SOME KINDS OF FOREST DAMAGES CAUSED BY RABBIT *(ORYCTOLAGUS CUNICULUS* L.*)* AND ITS FEEDING CHOICE IN THE SCOPE OF ACCESSIBLE TREES AND BUSHES.] *Poznan. Wyzsa Szkola Roln. Rocz.* 8: 113-128. 1967. [From Bibliog. Agr. 33(9), 1969. In Polish with English summ.] *WR 137: 22*

Genest-Villard, H. PARTICULARITIES DES LIEVRES DU SUD-OUEST DE L'ANGOLA. [PECULIARITIES OF THE HARES IN SOUTHWEST ANGOLA.] *Mammalia* 33(1): 124-132, illus. 1969. [From Biol. Abstr. 50(23), 1969. In French with English summ.] *WR 137: 22*
[Mus. Natl. Hist. Nat., Paris, France.]

Gibb, J. A., G. D. Ward, and C. Patricia Ward. AN EXPERIMENT IN THE CONTROL OF A SPARSE POPULATION OF WILD RABBITS *(ORYCTOLAGUS C. CUNICULUS* L.*)* IN NEW ZEALAND. *New Zealand J. Sci.* 12(3): 509-534, 5 figs. Sept. 1969. *WR 137: 22*
[Animal Ecol. Div., DSIR, Lower Hutt, New Zealand.] Summary: Indices of rabbit sign (mainly faecal pellets) were used to measure changes in density of an extremely sparse population of wild rabbits following the experimental withdrawal of Rabbit Board control from some 3,000 acres (c 1,200 ha) of hill pasture and scrub. After three years, there was significantly less sign (and fewer rabbits) than previously, both on the protected area and on adjacent land still controlled by shooting. The rabbits were distributed patchily in small groups, which fluctuated asynchronously. Samples of dead rabbits showed the population to be in excellent condition, with prolonged breeding and large litters, and there was ample feed. It is suggested that predation, especially by feral cats, held the rabbits at low density without control by man. Though probably there were only about 13 rabbits/100 acres on the study area, two-thirds of the cat droppings examined contained remains of rabbits--apparently the most important food item. At the end of the experiment the protected population contained relatively fewer young and more old animals than did the neighbouring population still controlled by shooting. Shooting tends to select full-grown animals, whereas cats and other natural predators favour young. Implications for rabbit control are discussed.

Holler, Nicholas R., and Michael F. Sorensen. CHANGES IN BEHAVIOR OF A MALE SWAMP RABBIT. *J. Mammal.* 50(4): 832-833. Nov. 1969. *WR 137: 22*
[Mo. Coop. Wildl. Res. Unit, Columbia.] Dominance of an individual *Sylvilagus aquaticus* during 1961-1967.

Lesel, R. ESSAI D'ESTIMATION DE LA POPULATION D'*ORYCTOLAGUS CUNICULUS* L. SUR LA PÉNINSULE COURBET (ÎLES KERGUELEN). [ATTEMPT TO ESTIMATE THE POPULATION OF *ORYCTOLAGUS CUNICULUS* L. ON THE COURBET PENINSULA (KERGUELEN ISLANDS).] *Mammalia* 32(4): 612-620, illus. 1968. [From Biol. Abstr. 50(20), 1969. In French with English summ.] *WR 137: 22*

RABBITS & PIKAS--Continued

McGinnes, Burd S., James S. Lindzey, Gene W. Wood, and Glenn R. Dudderar, compilers. A PARTIAL BIBLIOGRAPHY OF THE COTTONTAIL RABBITS. *Va. Polytech. Inst., Extension Div.* MT-83. i + 29 p. Oct. 1969. *WR 137: 23*
[Va. Polytech. Inst., Blacksburg.] A compilation undertaken by the Pennsylvania and Virginia Cooperative Wildlife Research Units. The references are listed alphabetically by author and indexed by subject.

Prakash, I., and G. C. Taneja. REPRODUCTION BIOLOGY OF THE INDIAN DESERT HARE, *LEPUS NIGRICOLLIS DAYANUS* BLANFORD. *Mammalia* 33(1): 102-117. Mar. 1969. [From J. Mammal. 50(4), 1969. With French summ.] *WR 137: 23*

Wainright, Larry C. A LITERATURE REVIEW ON COTTONTAIL REPRODUCTION. *Colo. Div. Game, Fish & Parks Spec. Rept.* no. 19. ii + 24 p., 3 figs. June 1969. Price $1.00. *WR 137: 23*
Abstract: Information is presented on cottontail reproduction in the United States relating to *Sylvilagus floridanus, S. transitionalis, S. audubonii* and *S. nuttallii*. Techniques of determining sex and age as well as data on breeding seasons, sex ratios, age ratios, number of litters per year and other aspects of cottontail reproduction show geographic variations. The eye-lens weight technique for aging cottontails appears superior to using the degree of ossification of the epiphyseal-cartilage. Accurate sex ratio data are difficult to obtain because the estimates are affected by the collection method, sample size and weather. Most authors agree there is a tendency toward synchronization of breeding dates, although, the mechanism which initiates the breeding season is unknown. The occurrence of juvenile breeding is established but the amount varies from 12-23% of the annual production. Partial litter resorption is common in first pregnancies but total litter resorption is rare.

RODENTS--MISCELLANEOUS

Aune, Ola Arne. OM FORPLANTNING OG UTBREDELSE HOS BJORKEMUS, *SICISTA BETULINA*. [ON PROPAGATION AND DISTRIBUTION OF BIRCH MICE, *SICISTA BETULINA* (PALLAS, 1778).] *Fauna* 22(1): 39-42, illus. 1969. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 23*
[Kongelige Norske Videnskabers Selskab, Mus., Trondheim, Norway.]

Bancroft, William L. NOTES ON REPRODUCTION OF THREE RODENTS OF DOUGLAS COUNTY, KANSAS. *Trans. Kans. Acad. Sci.* 72(1): 67-69. Spring 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 23*

Brown, L. E. FIELD EXPERIMENTS ON THE MOVEMENTS OF *APODEMUS SYLVATICUS* L. USING TRAPPING AND TRACKING TECHNIQUES. *Oecologia* 2(2): 198-222, illus. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 23*
[Imperial Coll., London, England.]

Choate, Jerry R., and J. Knox Jones, Jr. ADDITIONAL NOTES ON REPRODUCTION IN THE MEXICAN VOLE, *MICROTUS MEXICANUS*. *Southwestern Nat.* 14(3): 356-358. Jan. 1970. *WR 137: 23*
[Univ. Kans., Lawrence.]

Cole, D. A. 30 YEARS OF RODENT BAITING IN NEW ZEALAND. *Pest Control* 37(11): 10, 12, 14. Nov. 1969. *WR 137: 23*
[Rodent Control Officer, City of Manukau, New Zealand.]

Dodge, Wendell E., and Paul R. Canutt. A REVIEW OF THE STATUS OF THE PORCUPINE *(ERETHIZON DORSATUM EPIXANTHUM)*, IN WESTERN OREGON. *Bur. Sport Fisheries & Wildl.* and *U.S. Forest Serv.* 25 p., [13] figs. 1969. *WR 137: 23*
[Bur. Sport Fisheries & Wildl., Olympia, Wash.]

Doucet, G. J., and J. R. Bider. ACTIVITY OF *MICROTUS PENNSYLVANICUS* RELATED TO MOON PHASE AND MOONLIGHT REVEALED BY THE SAND TRANSECT TECHNIQUE. *Canadian J. Zool.* 47(6): 1183-1186. Nov. 1969. *WR 137: 24*

[Macdonald Coll., Quebec, Canada.] Abstract: Activity of *Microtus pennsylvanicus* was recorded as the number of crossings per day over a sand transect during four consecutive summers. Appropriate samples were selected to test the effects of both moon phases and moonlight on activity. Initially the results of tests comparing new moon to full moon phases showed the voles were more active during new mooon in only 3 of 10 discreet paired samples tested. However, when the effects of sampling sequence, phenology of population growth, date at which moon phases occurred, and, finally, the effect of climate were all considered as factors which could have affected the above results, it seemed reasonable to conclude that the new moon phase tended to be associated with higher activity. To establish if moonlight by itself, independent of phases, was a factor affecting the activity, tests were made during brightest and darkest nights of the lunar month and results indicated that moonlight did not affect the differences in activity found in the moon phase tests.

Douglas, Charles L. COMPARATIVE ECOLOGY OF PINYON MICE AND DEER MICE IN MESA VERDE NATIONAL PARK, COLORADO. *Univ. Kans. Publ. Mus. Nat. Hist.* 18(5): 421-504, 20 figs. 20 Aug. 1969. *WR 137: 24*

Home range, habitat characteristics, nesting and nest construction, reproduction, growth, parental behavior, changes owing to increase in age, anomalies and injuries, food habits, water consumption, parasitism and predation in relation to *Peromyscus maniculatus* and *P. truei*.

Frank, Fritz. ZUR KENNTNIS DER SPANISCHEN FELDMAUS *(MICROTUS ARVALIS ASTURIANUS* MILLER, 1908). [INFORMATION ON THE SPANISH FIELD MOUSE *(MICROTUS ARVALIS ASTURIANUS).*] *Bonner Zool. Beitr.* 19(3-4): 189-197. Dec. 1968. [From J. Mammal. 50(4), 1969. In German with English summ.] *WR 137: 24*

Fuller, W. A. CHANGES IN NUMBERS OF THREE SPECIES OF SMALL RODENT NEAR GREAT SLAVE LAKE, N. W. T. CANADA, 1964-1967 AND THEIR SIGNIFICANCE FOR GENERAL POPULATION THEORY. *Ann. Zool. Fenn.* 6(2): 113-144, illus. 1969. [From Biol. Abstr. 50(22), 1969.] *WR 137: 24*

[Univ. Alberta, Edmonton, Alberta, Canada.]

Genoways, Hugh H., and J. Knox Jones, Jr. NOTES ON POCKET GOPHERS FROM JALISCO, MEXICO, WITH DESCRIPTIONS OF TWO NEW SUBSPECIES. *J. Mammal.* 50(4): 748-755, 3 figs. Nov. 1969. *WR 137: 24*

[Univ. Kans., Lawrence.] Systematic, distributional, and ecological data are provided for seven taxa, two described as new, of three species of the pocket gopher genus *Pappogeomys* in the Mexican state of Jalisco.--From abstr.

Getz, Lowell L. LABORATORY STUDIES OF INTERACTIONS BETWEEN THE WHITE-FOOTED MOUSE AND REDBACK VOLE. *Canadian Field-Nat.* 83(2): 141-146. Apr.-June 1969. *WR 137: 24*

[Univ. Conn., Storrs.] *Clethrionomys gapperi* appears to be restricted to wet swamps by greater water requirements than *Peromyscus leucopus*. The low numbers of *P. leucopus* in swamps do not appear to be the result of interspecific aggression.

Gladkina, T. S. [THE INFLUENCE OF THE STEPPES INUNDATION AND ENLARGEMENT OF THE AREA OF CULTIVATION UPON DISTRIBUTION AND NUMBERS OF HARMFUL RODENTS OF AZERBAIJAN.] *Zool. Zhur.* 47(12): 1840-1850. 1968. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 24*

Hammer, Donald A. CHANGES IN THE ACTIVITY PATTERNS OF DEER MICE *(PEROMYSCUS MANICULATUS)* CAUSED BY WIND. *J. Mammal.* 50(4): 811-815, 4 figs. Nov. 1969. *WR 137: 24*

[Okla. State Univ., Stillwater.]

Hardin, James W., Roger W. Barbour, and Wayne H. Davis. OBSERVATIONS ON THE HOME RANGE OF A YELLOW-NOSED COTTON RAT, *SIGMODON OCHROGNATHUS*. *Southwestern Nat.* 14(3): 353-355, 2 figs. Jan. 1970. *WR 137: 25*
[Memphis State Univ., Memphis, Tenn.]

Judd, Frank W. GEOGRAPHIC VARIATION IN THE DEER MOUSE, *PEROMYSCUS MANICULATUS*, ON THE LLANO ESTACADO. *Southwestern Nat.* 14(3): 261-282, 8 figs. Jan. 1970. *WR 137: 25*
[Texas Technol. Univ., Lubbock.]

Kahmann, Hermann, and Theodor Staudenmayer. BIOMETRISCHE UNTERSUCHUNG AN ZWEI POPULATION DES GARTENSCHLÄFERS *ELIOMYS QUERCINUS* LINNAEUS, 1766. [BIOMETRICAL INVESTIGATIONS ON TWO POPULATIONS OF *ELIOMYS QUERCINUS*.] *Z. Säugetierk.* 34(2): 98-109. Apr. 1969. [From J. Mammal. 50(4), 1969. In German with English summ.] *WR 137: 25*

Koshinsky, Gordon, and Margaret Koshinsky. A FREAK MORTALITY OF MEADOW VOLES DUE TO HIGHWAY MAINTENANCE. *Blue Jay* 27(4): 226-227. Dec. 1969. *WR 137: 25*
[Saskatoon, Saskatchewan, Canada.] One hundred and sixty-five *Microtus pennsylvanicus* were found dead along a measured mile in an oil strip left ungravelled during road repairs. Apparently all voles which encountered the oil died.

Lidicker, W. Z., Jr., and S. F. MacLean, Jr. A METHOD FOR ESTIMATING AGE IN THE CALIFORNIA VOLE, *MICROTUS CALIFORNICUS*. *Am. Midland Nat.* 82(2): 450-470, 10 figs. Oct. 1969. *WR 137: 25*
[Univ. Calif., Berkeley.] Several methods for estimating age are developed for *Microtus californicus*, based on cranial and body measurements. These proved sufficiently accurate for many ecological studies.--From abstr.

Mermod, Claude. ÉCOLOGIE ET DYNAMIQUE DES POPULATIONS DE TROIS RONGEURS SYLVICOLES. [ECOLOGY AND DYNAMICS OF THREE FOREST RODENTS.] *Mammalia* 33(1): 1-57. Mar. 1969. [From J. Mammal. 50(4), 1969. In French with English summ.] *WR 137: 25*

Miller, Donald H., and Lowell L. Getz. LIFE-HISTORY NOTES ON *MICROTUS PINETORUM* IN CENTRAL CONNECTICUT. *J. Mammal.* 50(4): 777-784, 2 figs. Nov. 1969. *WR 137: 25*
[Lyndon State Coll., Lyndonville, Vt.] Life-history information was obtained for the pine vole, *Microtus pinetorum*, in upland oak forests and lowland swamps from live- and snap-trap data during the period from 1963 to 1967. All data obtained pertain only to those animals active on the surface. Population densities fluctuated from 0 to 14.6 per hectare; most years density of pine voles paralleled the same general trend of the white-footed mouse, *Peromyscus leucopus*. --From abstr.

Pearson, Oliver, Norma Binsztein, Lilian Boiry, Cristina Busch, Maria Di Pace, Gilberto Gallopin, Pablo Penchaszadeh, and Martha Piantanida. ESTRUCTURA SOCIAL, DISTRIBUCIÓN ESPACIAL Y COMPOSICIÓN POR EDADES DE UNA POBLACIÓN DE TUCO-TUCOS *(CTENOMYS TALARUM)*. [SOCIAL STRUCTURE, SPATIAL DISTRIBUTION, AND AGE COMPOSITION OF A POPULATION OF TUCO-TUCO *(CTENOMYS TALARUM)*.] *Invest. Zool. Chilenas* 13: 47-80. Sept. 1968. [From J. Mammal. 50(4), 1969. In Spanish.] *WR 137: 25*

Poduschk, Walter. ÜBER DIE WAHRNEHMUNG VON UTRASCHALL BEIM IGEL, *ERINACEUS EUROPAEUS ROUMANICUS*. [ULTRASONIC PERCEPTION IN THE HEDGEHOG, *ERINACEUS EUROPEAUS ROUMANICUS*.] *J. Vergl. Physiol.* 61(4): 420-426, illus. 1968. [From Biol. Abstr. 50(24), 1969. In German with English summ.] *WR 137: 25*
[Univ. Salzburg, Salzburg, Austria.]

Ranney, Robert. THE LOCAL DISTRIBUTION OF TWO SPECIES OF *PEROMYSCUS* IN YANKTON COUNTY, SOUTH DAKOTA. *M.A. thesis, Univ. S. Dak.* 33 p. 1966. *WR 137: 26*
Courtesy/ Webster H. Sill, Jr.

Ropartz, P. OLFACTION ET COMPORTEMENT SOCIAL CHEZ LES RONGEURS. [OLFACTION AND SOCIAL BEHAVIOR AMONG THE RODENTS.] *Mammalia* 32(4): 550-569. 1968. [From Biol. Abstr. 50(20), 1969. In French with English summ.] *WR 137: 26*
[Lab. Psychophysiol., Fac. Sci., Strasbourg, France.]

Rothschild, E. V., G. B. Postnikov, and E. G. Samarin. [DISTRIBUTION OF RODENTS AND PECULIARITIES OF THE NATURAL PLAGUE FOCUS IN THE LOWER URAL VALLEY.] *Zool. Zhur.* 48(2): 256-269. 1969. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 26*

Smirnov, P. K. [ECO-PHYSIOLOGICAL ANALYSIS OF SOME SPECIES OF RODENTS.] *"Nauka" Press* (Leningrad). 135 p. 1968. [From J. Mammal. 50(4), 1969. In Russian.] *WR 137: 26*

Smith, Michael H. MATING BEHAVIOR OF *PEROMYSCUS POLIONOTUS*. *Quart. J. Fla. Acad. Sci.* 30(3): 230-240, illus. 1967. [From Biol. Abstr. 50(17), 1969.] *WR 137: 26*
[AEC, SROO, Aiken, S.C.]

Tanaka, Ryo, and Masaomi Kanamori. INQUIRY INTO EFFECTS OF PREBAITING ON REMOVAL CENSUS IN A VOLE POPULATION. *Res. Population Ecol.* 11(1): 1-13, 2 figs. June 1969. In English with Japanese summ. *WR 137: 26*
[Kochi Women's Univ., Kochi, Japan.] *"Microtus montebelli."*

Tanton, M. T. THE ESTIMATION AND BIOLOGY OF POPULATIONS OF THE BANK VOLE *(CLETHRIONOMYS GLAREOLUS* (SCHR.)) AND WOOD MOUSE *(APODEMUS SYLVATICUS* (L.)). *J. Animal Ecol.* 38(3): 511-529, 4 figs. Oct. 1969. *WR 137: 26*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdonshire, England.] Live trapping of populations of *Clethrionomys glareolus* and *Apodemus sylvaticus* to obtain capture/recapture data for estimating population size was unsatisfactory except possibly in the winter. Sampling with 264 traps at 15 m intervals on a square grid was more satisfactory than using 288 traps at ninety-six random positions on the same grid. Population, size and changes, distribution, sex ratio and reproductive data, overwinter weight loss, seasonal weight distribution, and survival rates are given.--From summ.

RATTUS & MUS

Best, L. W. FOOD OF THE ROOF-RAT, *RATTUS RATTUS RATTUS* (L.), IN TWO FOREST AREAS OF NEW ZEALAND. *New Zealand J. Sci.* 12(2): 258-267, illus. 1969. [From Biol. Abstr. 50(23), 1969.] *WR 137: 26*
[Forest Res. Inst., Rangiora, New Zealand.]

Daniel, M. J. A SURVEY OF RATS ON KAPITI ISLAND, NEW ZEALAND. *New Zealand J. Sci.* 12(2): 363-372, 2 figs. June 1969. *WR 137: 26*
[DSIR, Lower Hutt, New Zealand.] The ship or roof rat *(Rattus r. rattus)* is apparently not now present on Kapiti Island, New Zealand. It was probably introduced to Kapiti during whaling activity (1827-40) and old droppings in the hut at Rangatira suggest that it was present within the last 80 years. The Norway rat *(R. norvegicus)* and the Polynesian rat or kiore *(R. exulans)* are widespread on Kapiti from the beaches to the summit, the former more commonly than the latter. Because the ship rat is a threat to the island avifauna, it is important to prevent its re-introduction.--From summ.

Greaves, J. H., L. E. Hammond, and A. H. Bathard. THE CONTROL OF RE-INVASION BY RATS OF PART OF A SEWER NETWORK. *J. Hygiene* 62: 341-351. 1968. *WR 137: 27*
Re-infestation, after poisoning, by Norway rats of a section of sewer network was studied. Poison bait barriers used in the study proved ineffective in preventing invasion from adjacent high population density areas.--From summ. Courtesy/ Joe E. Brooks.

Horner, B. Elizabeth, and J. Mary Taylor. PATERNAL BEHAVIOR IN *RATTUS FUSCIPES*. *J. Mammal.* 50(4): 803-805. Nov. 1969. *WR 137: 27*
[Smith Coll., Northampton, Mass.]

Jackson, William B. ANTICOAGULANT RESISTANCE IN EUROPE. *Pest Control* 37(3): 51-55, illus. Mar. 1969. *WR 137: 27*
[Bowling Green State Univ., Bowling Green, Ohio.] Populations of *Rattus norvegicus* have become resistant to Warfarin in Scotland, England, Wales, and Denmark. Control can be achieved through use of acute poisons.

Jackson, William B. ANTICOAGULANT RESISTANCE (PART 2). *Pest Control* 37(4): 40-43. Apr. 1969. *WR 137: 27*
[Bowling Green State Univ., Bowling Green, Ohio.] Resistance of Norway rats to Warfarin is hereditary and appears to be related to a single dominant gene. The resistance involves hydroxycoumarin and indandione groups of rodenticides as well as Warfarin.

Olson, W. P., E. Silver, and L. Y. Basa. ANTICOAGULANT FORMULATIONS FOR RODENT CONTROL IN PLEIKU, VIETNAM. *Pest Control* 37(8): 26, 1 fig. Aug. 1969. *WR 137: 27*
[Univ. Queensland, St. Lucia, Australia.] Baits containing oil-base materials (fish, sauce, vegetable oil, or peanut butter) were accepted more readily by *Rattus rattus, R. norvegicus,* and *R. exulans* than baits with no additives.

Rennison, B. D., L. E. Hammond, and G. L. Jones. A COMPARATIVE TRIAL OF NORBORMIDE AND ZINC PHOSPHIDE AGAINST *RATTUS NORVEGICUS* ON FARMS. *J. Hygiene* 66: 147-158. 1968. *WR 137: 27*
Summary: Norbormide at 1.0 and 0.5% and zinc phosphide at 5.0 and 2.5% were each tested in four types of cereal bait, after pre-baiting and as direct poisons, against infestations of *R. norvegicus* on 48 farms in Montgomeryshire. Relative success of treatments was measured by the reduction in takes of wheat baits before and after poisoning. Zinc phosphide proved significantly more successful than norbormide, irrespective of the cereal bait, concentration of poison or method of treatment used.--Courtesy/ Joe E. Brooks.

Smith, R. W. THE CONTROL OF RATS IN COCONUTS USING RAT BLOCKS. *Oleagineux* 22(3): 159-160, illus. 1967. [From Biol. Abstr. 50(24), 1969. In English with French and Spanish summ.] *WR 137: 27*
[Coconut Ind. Board, Kingston, Jamaica.] Abstract: An anti-coagulant mixed with corn flour is coated with paraffin wax, which protects it from rain and damp. For a shock treatment, half-pound blocks are placed on the ground along the line of trees, one every 5 or 6 trees; however, 3 or 4 treatments a year at the rate of 2 lbs/acre are usually sufficient.

Taylor, K. D. AN OUTBREAK OF RATS IN AGRICULTURAL AREAS OF KENYA IN 1962. *East African Agr. & Forestry J.* 34(1): 66-77, illus. 1968. [From Biol. Abstr. 50(23), 1969.] *WR 137: 27*
[Infest. Control Lab., Tolworth, England.] Eight spp. were regarded as pests; the most important of these were *Rattus (Mastomys) natalensis, Arvicanthis niloticus* and *Rhabdomys pumilio.*

SCIURIDS

Burger, George V. RESPONSE OF GRAY SQUIRRELS TO NEST BOXES AT REMINGTON FARMS, MARYLAND. *J. Wildl. Mgmt.* 33(4): 796-801, 2 figs. Oct. 1969. *WR 137: 28*

[Max McGraw Wildl. Foundation, Dundee, Ill.] Abstract: The response of a population of gray squirrels *(Sciurus carolinensis)* to artificial dens was studied by live-trapping and tagging from 1963-66 on a peninsula at Remington Farms, Maryland. A border of largely immature lowland forest, providing abundant mast, supplemented by standing corn, was divided into five test units, from 9.5-26.0 acres. Rubber-tire dens were placed in three units; two were used as controls. Trapping each winter indicated population increases of 65 to 100 percent on treated units 1-2 years after dens were erected, while control populations remained stable. Ingress, egress and inter-unit movements apparently were not involved importantly in population changes, which were attributed to increased survival on treated units of young to their first winter, and all squirrels from winter to winter. Better survival, in turn was attributed to use made of den structures, which presumably afforded secure nest sites otherwise scarce in the immature woodland.

Carpenter, James W., and Richard P. Martin. CAPTURING PRAIRIE DOGS FOR TRANSPLANTING. *J. Wildl. Mgmt.* 33(4): 1024. Oct. 1969. *WR 137: 28*

[Okla. Coop. Wildl. Res. Unit, Stillwater.] Abstract: A 750-gallon fertilizer applicator containing pressurized water was used in catching 29 prairie dogs *(Cynomys ludoviciana)* in 2 hours. This technique is simple, inexpensive, efficient, and can probably be used with success in capturing other burrowing mammals.

Clark, Tim W. ABIOTIC ENVIRONMENTAL FACTORS AFFECTING THE DAILY AND SEASONAL ACTIVITY PATTERNS OF THE WHITE-TAILED PRAIRIE-DOG *(CYNOMYS LEUCURUS)*. *J. Colo.-Wyo. Acad. Sci.* 6(1): 60. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 28*

Abstract only.

Clement, Paul W. POSITIONING DOMINANCE IN GROUND SQUIRRELS: A MEASURE OF SOCIAL HIERARCHIES. *Psychol. Repts.* 23(3): 1095-1098. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 28*

Corell, M. Gil, and F. Marti. DISTRIBUCIÓN Y BIOTOPO DE LAS ARDILLAS *(SCIURUS VULGARIS)* EN LA PROVINCIA DE VALENCIA. [DISTRIBUTION AND BIOTYPE OF THE SQUIRRELS *(SCIURUS VULGARIS)* IN THE PROVINCE OF VALENCIA.] *Bol. Real Soc. Espan. Hist. Nat. Secc. Biol.* 65(3/4): 249-251, illus. 1967. [From Biol. Abstr. 50(20), 1969. In Spanish.] *WR 137: 28*

Fouch, William R. RESULTS OF THREE EARLY SQUIRREL SEASONS AT THE ROSE LAKE WILDLIFE RESEARCH AREA. *Mich. Dept. Nat. Resources Res. & Development Rept.* no. 175. 4 p. 18 July 1969. *WR 137: 28*

Squirrel kill during the study period has been 50% higher than the average of the preceding 16 yrs. The early seasons have not interfered with late litters.

Long, Charles A., and Donald Cronkite. TAXONOMY AND ECOLOGY OF SIBLING CHIPMUNKS IN CENTRAL COLORADO. *Southwestern Nat.* 14(3): 283-291, 1 fig. Jan. 1970. *WR 137: 28*

[Wis. State Univ., Stevens Point.]

McCarley, Howard. DIFFERENTIAL REPRODUCTION IN *SPERMOPHILUS TRIDECEMLINEATUS*. *Southwestern Nat.* 14(3): 293-296. Jan. 1970. *WR 137: 28*

[Austin Coll., Sherman, Texas.] Abstract: The reproductive success of wild female *Spermophilus tridecemlineatus* was studied from June, 1963 to June, 1967, in northern Texas. An analysis of the 1967 population showed that of 27 residents, 2 (1 male, 1 female) were adults present in 1963 and one was an immigrant male. The remaining 24 individuals had pedigrees tracing to four females present in 1963. Thus, 89% of the 1967 squirrels were either directly or indirectly descended from only 20% (4 individuals) of the 1963 resident female population. The remaining 80% (16 individuals) of the 1963 resident females were not successful in leaving genotypes to the 1967 population.

SCIURIDS--Continued

Nee, James A. REPRODUCTION IN A POPULATION OF YELLOW-BELLIED MARMOTS *(MARMOTA FLAVIVENTRIS)*. *J. Mammal.* 50(4): 756-765, 3 figs. Nov. 1969. *WR 137: 29*
[Bur. Sport Fisheries & Wildl., 50 Maple Ave., Patchogue, N.Y.] Abstract: The annual reproductive cycle within a yellow-bellied marmot population was studied in the central Sierra Nevada of California about 30 mi. N Lake Tahoe. Seventy animals were live-trapped and ear-tagged, and the reproductive organs of 47 marmots were examined histologically. The approximate date of emergence from hibernation apparently was governed by the time of spring thaw. The animals were ready to breed when they emerged, so the thaw apparently would determine the time of mating and copulation, parturition, weaning, and juvenile emergence from the natal burrow. During the 2-week mating and copulation period, almost all adult females, but few subadults, became pregnant. The average gravidum per pregnant female was 4.8 and litter size was slightly higher. The adult sex ratio was approximately equal, as judged by trapping records. However, juvenile males were seen much more often than adult males. A high population in 1966 dropped to a low level in 1967, seemingly as a result of over-winter loss. Juveniles grew most rapidly, followed by subadults, and then by adults. The average number of active days required to grow 1 centimeter in length was 4.7 days for juveniles, 11 days for subadults, and 16 days for adults.

Prakash, Ishwar, L. R. Kametkar, and K. G. Purohit. HOME RANGE AND TERRITORIALITY OF THE NORTHERN PALM SQUIRREL, *FUNAMBULUS PENNANTI* WROUGHTON. *Mammalia* 32 (4): 603-611. Dec. 1968. [From J. Mammal. 50(4), 1969. With French summ.] *WR 137: 29*

Shirer, Hampton W., and Jerry F. Downhower. RADIO TRACKING OF DISPERSING YELLOW BELLIED MARMOTS. *Trans. Kans. Acad. Sci.* 71(4): 463-479. Winter 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 29*

Stienecker, Walter, and Bruce M. Browning. FOOD HABITS OF THE WESTERN GRAY SQUIRREL. *Calif. Fish & Game* 56(1): 36-48, 1 fig. Jan. 1970. *WR 137: 29*
Abstract: Fungi were the staple food item of 310 western gray squirrels *(Sciurus griseus)* collected in Trinity, Tehama, and Monterey Counties, California. Hypogeous (subterranean) fungi were the most important, with the orders Gasteromycetes and Tuberales occurring in the diet every month of the year. In Trinity and Tehama Counties, pine nuts and acorns also were important items eaten mainly in the summer and fall. In Monterey County, fruit of the California bay *(Umbellularia californica)* was second in importance. Forb leafage and stems, utilized principally in the spring, made up most of the green vegetation eaten. Although hypogeous fungi are the staple food, acorn and pine mast may be the more critical. These high-energy foods prepare the squirrels for overwintering. Supplemental data are included from a collection of 59 gray squirrels from four counties on the western slope of the central Sierra and 31 from Humboldt County in northwestern California.

Tomberlin, Donald R. POPULATION ECOLOGY OF TWO CHIPMUNK POPULATIONS IN SOUTHERN CENTRAL COLORADO. *J. Colo.-Wyo. Acad. Sci.* 6(1): 63-64. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 29*
Abstract only.

Voipio, Paavo. SOME ECOLOGICAL ASPECTS OF POLYMORPHISM IN THE RED SQUIRREL *SCIURUS VULGARIS* L. IN NORTHERN EUROPE. *Oikos* 20(1): 101-109. 1969. [From Biol. Abstr. 50(20), 1969. In English with Russian summ.] *WR 137: 29*
[Univ. Turku, Turku, Finland.]

BEAVER

Aune, Ola Arne. [BEAVER OBSERVED IN NORTH-TRÖNDELAG AND RE-INTRODUCED IN SOUTH-TRÖNDELAG.] *Fauna* 22(1): 61. 1969. [From J. Mammal. 50(4), 1969. In Norwegian with English summ.] *WR 137: 29*

Henry, Dale B., and Theodore A. Bookhout. PRODUCTIVITY OF BEAVERS IN NORTHEASTERN OHIO. *J. Wildl. Mgmt.* 33(4): 927-932. Oct. 1969. *WR 137: 30*
[Imperial Natl. Wildl. Refuge, Yuma, Ariz.] Abstract: Productivity of beavers *(Castor canadensis)* from northeastern Ohio was calculated from analysis of 219 specimens (114 males, 105 females) collected in the 1966 and 1967 trapping seasons (Feb. 1-15). Beavers were aged by characteristics of eruption, closure of basal openings, and cementum layering of molar teeth. Seventy-four percent of breeding-age females (1.5 years or older) had ovulated, but only 40 percent of 1.5-2-year-olds had ovulated. The mean ovulation rate for ovulating females was 4.3, and mean placental scar count was 3.8. Signs of implantation were present in 62 percent of breeding-age females. Mean ovulation rate, conception rate, and placental scar count increased to age 5.5-6 years. Estimated prenatal mortality was 11-16 percent. First-year trapping and natural mortality was calculated to be 41.6 percent. Estimated rate of annual population increase, including prenatal and juvenile mortality, was 49 percent. On this basis, a harvest rate of 32 percent would maintain a stable beaver population.

Lahti, Seppo, and Matti Helminen. SUOMEN MAJAVIEN ISTUTUSHISTORIASTA JA KANNAN LEVINNEISYYS 1960-LUVULLA. [HISTORY OF REINTRODUCTIONS AND PRESENT POPULATION STATUS OF THE BEAVER IN FINLAND.] *Suomen Riista* 21: 67-75, 4 figs. 1969. In Finnish with English summ. *WR 137: 30*

FUR ANIMALS, GENERAL

Johnson, Donald R. RETURNS OF THE AMERICAN FUR COMPANY, 1835-1839. *J. Mammal.* 50(4): 836-839. Nov. 1969. *WR 137: 30*
[Univ. Idaho, Moscow.]

BEARS

Carpenter, Max. LATE RETURNS FROM BLACK BEAR TAGGING STUDY. *Va. Wildl.* 30 (10): 6-7, illus. Oct. 1969. *WR 137: 30*
"Total recoveries from 1958 to 1968 show that of 45 tagged males, 33 (73%) have been harvested, while only 14 (37%) of the 37 tagged females have been taken by hunters."

Koford, Carl B. THE LAST OF THE MEXICAN GRIZZLY BEAR. *IUCN Bull. New Ser.* 2(12): 95. July-Sept. 1969. *WR 137: 30*
[Univ. Calif., Berkeley.]

Larsen, Thor. POLAR BEAR INVESTIGATIONS IN SVALBARD 1967. A PROGRESS REPORT: II. *Norsk Polarinst. Arbok* 1967: 171-179, illus. 1969. [From Biol. Abstr. 50 (17), 1969.] *WR 137: 30*
[Univ. Oslo, Oslo, Norway.]

Larsen, Thor. RECOVERY OF POLAR BEARS MARKED IN SVALBARD. *Norsk Polarinst. Arbok* 1967: 237-238. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 30*

Larsen, Thor. ISBJØRNUNDERSØKELSER I CANADA HØSTEN 1967. [POLAR BEAR INVESTIGATIONS IN CANADA, AUTUMN 1967.] *Norsk Polarinst. Arbok* 1967: 238-239. 1969. [From J. Mammal. 50(4), 1969. In Norwegian with English summ.] *WR 137: 30*

Lentfer, J. W. POLAR BEAR TAGGING IN ALASKA, 1968. *Polar Record* (Cambridge) 14(91): 459-462. Jan. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 30*

Novikov, G. A., A. E. Airapet'yants, Yu. B. Pukinskii, E. K. Timofeeva, and I. M. Fokin. [SOME SPECIFIC POPULATION FEATURES OF BROWN BEARS IN LENINGRAD OBLAST.] *Zool. Zhur.* 48(6): 885-901, illus. 1969. [From Biol. Abstr. 50(23), 1969. In Russian with English summ.] *WR 137: 30*

BEARS--Continued

Pulliainen, Erkki. SUOMESSA VUONNA 1967 KAADETUT KARHUT JA ILVEKSET. [THE NUMBER OF BEAR *(URSUS ARCTOS)* AND LYNX *(LYNX LYNX)* KILLED IN FINLAND IN 1967.] *Suomen Riista* 21: 136-139. 1969. In Finnish with English summ. *WR 137: 31*
Fifty-six bear and twelve lynx.

RACCOON, RINGTAIL, COATI

Boddicker, M. L., and D. R. Progulske. HELMINTH PARASITES OF RACCOON IN SOUTH DAKOTA. *Proc. S. Dak. Acad. Sci.* 47: 161-166. Nov. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 31*

Richards, Richard E. THE RINGTAIL *(BASSARISCUS ASTUTUS)* IN COLORADO. A PRELIMINARY REPORT. *J. Colo.-Wyo. Acad. Sci.* 6(1): 61-62. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 31*
Abstract only.

MUSTELIDS

Aune, Ola Arne, and Svein Myrberget. [THE PRESENT DISTRIBUTION OF THE BADGER, *MELES MELES* (LINNÉ, 1758) IN NORWAY.] *Fauna* 22(1): 27-33. 1969. [From J. Mammal. 50(4), 1969. In Norwegian with English summ.] *WR 137: 31*

Barabash-Nikiforov, I. I., S. V. Marakov, and A. M. Nikolaev. [THE SEA OTTER.] *"Nauka" Press* (Leningrad). 184 p. 1968. [From J. Mammal. 50(4), 1969. In Russian.] *WR 137: 31*

Boddicker, M. L. PARASITES OF THE BLACK-FOOTED FERRET. *Proc. S. Dak. Acad. Sci.* 47: 141-148. Nov. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 31*

Chiriac, Elena, and Profira Barbu. CONTRIBUTII LA CUNOASTEREA HELMINTOFAUNEI MAMIFERELOR DIN FAM. MUSTELIDAE (ORD. CARNIVORA) DIN ROMÂNIA. [CONTRIBUTION TO THE KNOWLEDGE OF THE HELMINTH FAUNA OF MUSTELIDAE (ORDER CARNIVORA) IN ROMANIA.] *Studii Cercetari Biol.* (Bucharest) 20(3): 273-281. 1968. [From J. Mammal. 50 (4), 1969. In Romanian with English summ.] *WR 137: 31*

Dachy, P., E. Delmee, and P. Simon. UNE NICHÉE DE MARTRES *(MARTES MARTES)* DANS UN NICHOIR À HULOTTES *(STRIX ALUCO)*. [A BROOD OF MARTENS *(MARTES MARTES)* IN A NEST BOX OF TAWNY OWL *(STRIX ALUCO)*.] *Aves* (Brussels) 5(6): 179-183. 1968. [From J. Mammal. 50(4), 1969. In French.] *WR 137: 31*

Dyer, William G. HELMINTHS OF THE STRIPED SKUNK, *MEPHITIS MEPHITIS*, IN NORTH AMERICA. *Am. Midland Nat.* 82(2): 601-605. Oct. 1969. *WR 137: 31*
[Southern Ill. Univ., Carbondale.] Abstract: A continuing checklist is presented of the helminths of the striped skunk, *Mephitis mephitis*, in North America since Erickson's report (1946) on the helminths of North American Mustelidae. Geographical distributions, with references, are given from 1947 to 1968. Parasites identified to species, not previously reported by Erickson, include 5 trematodes, 13 nematodes, 3 cestodes, and 2 acanthocephala.

Ebert, Earl E. CALIFORNIA SEA OTTER--CENSUS AND HABITAT SURVEY. *Underwater Naturalist* 5(3): 20-23. Winter 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 31*

Erlinge, Sam. FOOD STUDIES ON CAPTIVE OTTERS *LUTRA LUTRA* L. *Oikos* 19(2): 259-270. 1968. [From Biol. Abstr. 50(20), 1969. In English with Russian summ.] *WR 137: 31*
[Univ. Lund, Lund, Sweden.]

Erlinge, Sam. FOOD HABITS OF THE OTTER *LUTRA LUTRA* L. AND THE MINK *MUSTELA VISON* SCHREBER IN A TROUT WATER IN SOUTHERN SWEDEN. *Oikos* 20(1): 1-7. 1969. [From Biol. Abstr. 50(20), 1969. In English with Russian summ.] *WR 137: 31*
[Univ. Lund, Lund, Sweden.]

MUSTELIDS--Continued

Gilbert, F. F., and E. D. Bailey. THE EFFECT OF EARLY WEANING ON THE SEXUAL BEHAVIOR AND REPRODUCTIVE SUCCESS OF RANCH MINK. *J. Mammal.* 50(4): 742-747, 1 fig. Nov. 1969. *WR 137: 32*
[Univ. Maine, Orono.] Females weaned prior to 8 weeks post-partum were significantly easier to breed than females weaned at 8 weeks of age or older. Successful breeding performances by the males apparently depended on a critical period of socialization in the litter environment occurring within 5 to 8 weeks after birth. Visual isolation appeared to inhibit reproductive behavior somewhat, possibly due to an asynchrony in physiological development.--From abstr.

Jefferies, D. J. CAUSES OF BADGER MORTALITY IN EASTERN COUNTIES OF ENGLAND. *J. Zool.* 157(4): 429-436. Apr. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 32*

Karyakarte, P. P. ON A SPECIES OF *EUPARYPHIUM* (TREMATODA: ECHINOSTOMATIDAE) RECORDED FOR THE FIRST TIME FROM THE OTTER, *LUTRA LUTRA* IN INDIA. *Riv. Parasitol.* (Rome) 29(3): 227-228. Sept. 1968. [From J. Mammal. 50(4), 1969. With Italian summ.] *WR 137: 32*

Kefferoes, D. J. CAUSES OF BADGER MORTALITY IN EASTERN COUNTIES OF ENGLAND. *J. Zool.* 157(4): 429-436. 1969. [From Biol. Abstr. 50(18), 1969.] *WR 137: 32*
[Monks Wood Exptl. Sta., Abbots Ripton, Huntingdon, England.]

MacLennan, R. R., and E. D. Bailey. SEASONAL CHANGES IN AGGRESSION, HUNGER, AND CURIOSITY IN RANCH MINK. *Canadian J. Zool.* 47(6): 1395-1404, 1 fig. Nov. 1969. *WR 137: 32*
[Dept. Nat. Resources, 311 21st St., Saskatoon, Saskatchewan, Canada.]

Pulliainen, Erkki. BREEDING BIOLOGY OF THE WOLVERINE *(GULO GULO* L.) IN FINLAND. *Ann. Zool. Fenn.* 5(4): 338-344, illus. 1968. [From Biol. Abstr. 50 (21), 1969.] *WR 137: 32*
[Univ. Helsinki, Helsinki, Finland.]

Rowe-Rowe, D. T. SOME OBSERVATIONS ON A CAPTIVE AFRICAN WEASEL *POECILOGALE ALBINUCHA. Lammergeyer* no. 10. p. 93-96. June 1969. *WR 137: 32*
Sleeping and feeding behavior are described.

Schladweiler, J. L., and G. L. Storm. DEN-USE BY MINK. *J. Wildl. Mgmt.* 33 (4): 1025-1026, 1 fig. Oct. 1969. *WR 137: 32*
[Univ. Minn., St. Paul.]

DOGS, WOLVES, FOXES

Bigalke, R. C., and D. T. Rowe-Rowe. AN ANALYSIS OF THE RESULTS OF HUNTING BLACK-BACKED JACKALS OVER A FIVE-YEAR PERIOD IN NATAL. *Lammergeyer* no. 10. p. 70-80, 3 figs. June 1969. *WR 137: 32*
Increased hunting activities do not appear to have resulted in a marked decrease in jackals.

Kennelly, James J., and Jerry D. Roberts. FERTILITY OF COYOTE-DOG HYBRIDS. *J. Mammal.* 50(4): 830-831. Nov. 1969. *WR 137: 32*
[Denver Federal Center, Denver, Colo.]

Krefting, Laurits W. THE RISE AND FALL OF THE COYOTE ON ISLE ROYALE. *Naturalist* 20(4): 24-31, illus. Winter 1969. *WR 137: 32*
[Bur. Sport Fisheries & Wildl., Univ. Minn., St. Paul.] Summary: Even at its best, the habitat on Isle Royale was marginal for coyotes. When strict fire protection was put into effect, the changes in plant succession gradually produced an even less favorable habitat. A reduced food supply and direct killing by wolves are the factors that probably contributed most to the coyote's disappearance. A combination of these and other factors plus the fact that it was an island situation probably was necessary to cause extinction. Social stress at peaks of abundance may also have led to some emigration to Canada in winters when ice bridges formed.

Rausch, Robert A. A SUMMARY OF WOLF STUDIES IN SOUTHCENTRAL ALASKA, 1957-1968. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 117-131, 3 figs. 1969. *WR 137: 33*

[Alaska Dept. Fish & Game, Fairbanks.] Summary: Wolves were protected from 1957 to 1968 in an area of southcentral Alaska encompassing approximately 17,000 square miles. Wolf numbers increased from 12 in 1953 to 400 to 450 by 1965. At this point illegal aerial hunting, legal hunting of wolves that followed the Nelchina caribou into Units 11 and 12, and relatively poor survival of pups during the summer of 1967 resulted in lowered wolf populations by late 1967. A further reduction took place in early 1968 when Unit 13 was reopened to aerial-hunting. Studies of ungulate prey, moose, caribou, and sheep, show that their utilization by wolves did not interfere significantly with human recreational use of the same resource. Competition between the two predators could create problems if human utilization approaches the net annual increase of ungulates.

Ross, J. G., and J. S. Fairley. STUDIES OF DISEASE IN THE RED FOX *(VULPES VULPES)* IN NORTHERN IRELAND. *J. Zool.* 157(3): 375-381. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 33*

[Vet. Res. Lab., Belfast, Northern Ireland.]

Stelfox, John G. WOLVES IN ALBERTA / A HISTORY 1800-1969. *Alberta Lands-Forests-Parks-Wildl.* 12(4): 18-27, illus. Winter 1969. *WR 137: 33*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Wolves were plentiful in Alberta before 1850, but declined rapidly thereafter along with their prey species. Population levels remained low until the 1940's when trapping pressure decreased and big game animals became more numerous. The present wolf population is estimated to be 3,550 animals.

Theberge, John B., and Douglas H. Pimlott. OBSERVATIONS OF WOLVES AT A RENDEZVOUS SITE IN ALGONQUIN PARK. *Canadian Field-Nat.* 83(2): 122-128. Apr.-June 1969. *WR 137: 33*

[Univ. British Columbia, Vancouver, British Columbia, Canada.] Four adult wolves and three pups were observed for 16 days in August 1962. Recordings of wolf pup howls were used to elicit howling response (60% effective). Pack and individual movements, activity periods, behavior, food, and vocalizations are discussed.

CATS

Curry-Lindahl, Kai. THE FORMER OCCURRENCE OF THE LYNX *(LYNX LYNX LYNX)* IN SCANDINAVIA. *Mammalia* 33(1): 140-144. 1969. [From Biol. Abstr. 50(23), 1969.] *WR 137: 33*

[Nord. Mus. & Skansen, Stockholm, Sweden.]

Makacha, Stephen, and George B. Schaller. OBSERVATION ON LIONS IN THE LAKE MANYARA NATIONAL PARK, TANZANIA. *East African Wildl. J.* 7: 99-103, 1 fig. Aug. 1969. *WR 137: 33*

[Tanzania Natl. Parks, P.O. Box 3134, Arusha, Tanzania.] Population size and composition, group size and composition, food habits, and tree-climbing of *Panthera leo.*

Nasibov, C. B. [ON THE ECOLOGY OF THE CHAUS WILD CAT *(FELIS CHAUS* LUELD.) IN AZERBAIJAN.] *Bull. Azerbaijan Acad. Sci. USSR Biol. Ser.* 3: 51-56. 1968. [From J. Mammal. 50(4), 1969. In Russian.] *WR 137: 33*

Schenkel, Rudolf. TOTEN LOWEN IHRE ARTGENOSSEN? [DO LIONS KILL MEMBERS OF THEIR OWN SPECIES?] *Umsch. Wiss. Tech.* 68(6): 172-174, illus. 1968. [From Biol. Abstr. 50(23), 1969. In German.] *WR 137: 33*

The social tendencies of lions, reasons for killing and cannibalism, and the significance of killing species members for the preservation of the species are discussed.

Ables, Ernest D., and Juanita Ables. FIELD IMMOBILIZATION OF FREE-RANGING IMPALA IN NORTHERN KENYA. *East African Wildl. J.* 7: 61-66. Aug. 1969. *WR 137: 34*

[Texas A&M Univ., College Station.] Summary: Two drug combinations were tested during 18 field captures of 14 individual impala in northern Kenya in 1966-67. Nine additional impala, eight females and one male, were darted but not captured. Dosages of 0.45 mg M.99 + 10.0 mg acepromazine + 4.5 mg hyoscine were adequate for males, but did not completely immobilize them. Females proved more difficult to capture, and all attempts using the acepromazine mixture were unsuccessful. The substitution of phencyclidine for acepromazine, and the deletion of hyoscine, proved a more suitable mixture. A dosage of 0.32 mg M.99 + 90 mg phencyclidine per animal completely immobilized both sexes. The phencyclidine-M.99 mixture was judged an improvement over other common field immobilizing drugs, but the long recovery time limits the usefulness of this drug combination for large-scale capturing operations.

Ables, Ernest D., and Juanita Ables. HOME-RANGE AND ACTIVITY STUDIES OF IMPALA IN NORTHERN KENYA. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 360-371, 3 figs. 1969. *WR 137: 34*

[Texas A&M Univ., College Station.] Summary: Eleven impala, 8 males and 3 females, were radio-tracked in Northern Kenya during 1966-67. Peaks in daily activity occurred from 6 a.m. to 10 a.m. and from 4 p.m. to 8 p.m. The impala stayed in cover during the hotter hours of the day and rested in the open at night. Average size of home ranges was 1.2 square miles, and average size of 12-hour ranges was approximately 50 percent less. The impala avoided dense cedar forests at all times and spent significantly more time in open grasslands at night than during the day. There was a significant association of impala with vegetative edges. Impala herds traveled to water more or less regularly during the dry seasons. The greatest disturbing factor was the presence of lions, free-ranging domestic dogs, and herds of cattle. Herd structure was instable and social behavior influenced the amount of movement by males.

Aune, Ola Arne. [WANDERING MUSK OX TRANSPORTED BACK TO DOVRE.] *Fauna* 22(1): 63. 1969. [From J. Mammal. 50(4), 1969. In Norwegian with English summ.] *WR 137: 34*

Benson, C. W. LARGE MAMMALS OF THE LIUWA PLAIN AND SIOMA-NGWEZI GAME RESERVES, BAROTSE. *Puku* no. 5. p. 49-57, 2 figs. 1969. *WR 137: 34*

[Univ. Museum, Cambridge, England.] Summary: Records are given of the larger mammals of the Liuwa Plain game reserve, northern Kalabo District, and the Sioma-Ngwezi reserve between the Zambezi and Mashi rivers, based on visits during 1964. In the Liuwa Plain reserve the wildebeest may have totalled 7,500, tsessebe 1,300 and oribi 2,000. Even approximate estimates of the other ungulates there, or of any in the Sioma-Ngwezi reserve, were not possible, but most species seemed in reasonably good numbers. No information on leopard was obtained. Lion and cheetah occur in both reserves, but lions have evidently been reduced on the Liuwa Plain. Wild dogs are present in both areas.

Bentley, A., and M. C. Downes. DEER IN NEW GUINEA. PART I: NOTES ON THE FIELD IDENTIFICATION OF CERTAIN DEER SPECIES LIKELY TO BE ENCOUNTERED IN PAPUA AND NEW GUINEA. *Papua & New Guinea Agr. J.* 20(1&2): 1-14, [17] figs. July-Sept. 1968. *WR 137: 34*

[7 Lysterville Ave., Malvern, Victoria, Australia.] Abstract: The presence of two species of deer, the rusa *(Cervus timorensis)* and axis *(Axis axis)* have been confirmed in the Territory of Papua and New Guinea. The more useful observations which can be made when deer are seen are listed, and the signs made by deer in the bush are described. The points by which the two Territory species of deer may be identified when seen in the field are listed and compared with four other species, which, although not recorded in the Territory, may have been introduced.

Bergerud, Arthur T., and Frank Manuel. AERIAL CENSUS OF MOOSE IN CENTRAL NEWFOUNDLAND. *J. Wildl. Mgmt.* 33(4): 910-916, 2 figs. Oct. 1969. *WR 137: 35*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: Moose *(Alces alces)* were censused in Central Newfoundland, by midwinter aerial counts on 1-square-mile quadrats. Habitats searched varied from closed-canopy forests to clear-cut logged areas. Accurate counts were secured immediately following snowfalls when the area of search was limited and the experienced pilot-observer team was more efficient. Individual moose were not randomly distributed but moose aggregations were randomly dispersed in one 16-square-mile block in five of six winter seasons. The distribution and density of moose aggregations, rather than individual animals, provide a sound basis for designing and evaluating census procedures and results.

Briedermann, L. [INFLUENCE OF BOARS ON BIOLOGICAL AND SILVICULTURAL CONDITIONS IN MANAGED FORESTS.] *Arch. Forstwesen* 17(9): 943-967. 1968. [From Bibliog. Agr. 33(10), 1969. In German with English summ.] *WR 137: 35*

Brna, Jan. FERTILITET KOŠUTA I POSTNATALNA SMRTNOST JELENČIĆA NA BELJU *(CERVUS ELAPHUS* L.*)*. [FERTILITY OF HINDS AND POSTNATAL MORTALITY OF YOUNG *(CERVUS ELAPHUS)* IN BELJE.] *Jelen* 8: 69-72. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 35*
Fertility in the two year or older class was 91% and mortality of young deer ranged from eight to ten percent.--From summ.

Brna, Jan, Vinko Munkačević, and Đuro Nikolandić. USMERAVANJE DINAMIKE I STRUKTURE POPULACIJE JELENA *(C. ELAPHUS* L.*)* NA BELJU (1945-1968). [DIRECTING THE DYNAMICS AND THE STRUCTURE OF RED DEER POPULATION *(CERVUS ELAPHUS)* IN BELJE IN THE PERIOD FROM 1945 TO 1968.] *Jelen* 8: 61-67, 4 figs. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 35*
Harvests in the 45,000 hectares are increased from an annual average of 174 during 1941-1951 to 1233 during 1962-1968. The current population estimate for the Belje plain forests is 4,000 red deer.--From summ.

Capp, John C. COMPETITION AMONG BIGHORN SHEEP, ELK, AND DEER IN ROCKY MOUNTAIN NATIONAL PARK, COLORADO. *M.S. thesis, Colo. State Univ.* xii + 132 p., 22 figs. June 1967. *WR 137: 35*
[Lincoln Natl. Forest, P.O. Box 840, Alamogordo, N. Mex.] Bighorn occupied only steep, rocky areas or contiguous alpine turf or dry meadow sites. Deer occupied meadow and turf sites most often, and elk were sighted in meadow and turf sites only. Bighorn occurrence was localized, and appeared limited by topography more than presence of other ungulates during summer.--From abstr.

Carlisle, D. B., and L. I. Ghorbial. FOOD AND WATER REQUIREMENTS OF DORCAS GAZELLE IN THE SUDAN. *Mammalia* 32(4): 570-576, illus. 1968. [From Biol. Abstr. 50(24), 1969. In English with French summ.] *WR 137: 35*
[Anti-Locust Res. Center, London, England.]

Clarke, R. T. J. THE OPHRYOSCOLECID CILIATES OF RED DEER *(CERVUS ELAPHUS* L.*)* IN NEW ZEALAND. *New Zealand J. Sci.* 11(4): 686-692. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 35*

Craighead, John J., Maurice G. Hornocker, Merlin W. Shoesmith, and Richard I. Ellis. A MARKING TECHNIQUE FOR ELK. *J. Wildl. Mgmt.* 33(4): 906-909, 1 fig. Oct. 1969. *WR 137: 35*
[Mont. Coop. Wildl. Res. Unit, Missoula.] Abstract: A durable, low-priced collar which permits individual recognition of up to 9,000 animals was field-tested over a period of 5 years on 1,507 elk *(Cervus canadensis)* in Yellowstone National Park. The collars were constructed of 38-inch lengths of 1/2 inch braided polyethylene rope through which seven 3- X 9-inch flags of colored Saflag material (available from the Safety Flag Company of America, Pawtucket, R.I.) were strung and secured with No. 3 hog rings. Saflag material remained in

readable condition during 5 years of observation in which 4,738 individual identifications of 1,206 different elk were made on winter ranges, and 442 individual identifications on the summer ranges represented 292 different elk. Area flags were observed 344 times; 46 percent of these observations were from aircraft. Loss of collars, as determined by recaptures, averaged 7.3 percent per year. Individual collars could be identified at distances of approximately 4 miles in good light with a 60 X spotting scope.

Dagg, Anne Innis. THE GALLOP OF THE WILDEBEEST. *J. Mammal.* 50(4): 825-826, 1 fig. Nov. 1969. *WR 137: 36*
[Univ. Guelph, Guelph, Ontario, Canada.]

Denney, Richard N. BLACK RHINOCEROS IMMOBILIZATION UTILIZING A NEW TRANQUILLIZING AGENT. *East African Wildl. J.* 7: 159-165. Aug. 1969. *WR 137: 36*
[P.O. Box 30362, Nairobi, Kenya.] Summary: Eleven black rhinoceroses were successfully immobilized, ten of them in the Arusha Chini area of Tanzania and one, a penned animal, near Nairobi. Of the total number, two were immobilized with Etorphine hydrochloride (M.99) and acetylpromazine; six with a combination of Etorphine, acetylpromazine and a new tranquillizer, Azaperone; and three with Etorphine and Azaperone. In addition, one attempt at immobilization with a relatively new analgesic, Fentanyl, was not satisfactory at the dosage used, the animal being immobilized later with Etorphine and included in the eleven rhino described. Injection was accomplished on the ten Tanzania animals with Cap-Chur equipment from a helicopter, and on the penned animal with a hand syringe. Specimens and data were collected from the immobilized rhino. They were then loaded into crates, given an antidote (nalorphine hydrobromide) intramuscularly, and then trucked to points of release or to holding pens. Immobilization data, weights, sexes, relative ages, rectal temperatures, respiratory rates and pulse rates are tabulated.

Downes, M. C. DEER IN NEW GUINEA. PART II: A PRELIMINARY NOTE ON THE DISTRIBUTION OF DEER IN THE TERRITORY OF PAPUA AND NEW GUINEA. *Papua & New Guinea Agr. J.* 20(3&4): 95-99, 4 figs. Dec.-Mar. 1968-1969. *WR 137: 36*
[Dept. Agr., Stock & Fisheries, Konedabu, New Guinea.]

Fadeev, E. V. [THE RESULTS OF A RESETTLEMENT OF SOME WILD UNGULATE ANIMALS IN THE HUNTING RANGES OF RUSSIA.] *Bull. Moscow Soc. Naturalists Biol. Ser.* 74 (1): 37-46. 1969. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 36*

Fairall, N. PRENATAL DEVELOPMENT OF THE IMPALA, *AEPYCEROS MELAMPUS* LICHT. *Koedoe* no. 12. p. 97-103, 2 figs. 1969. *WR 137: 36*
Summary: The growth of the Impala foetus was investigated by weighing and measuring 379 foeti at weekly intervals. The average weights and measurements for each week are tabulated and growth curves for weight and length are presented together with a chronological description of changes in the external morphology.

Fairall, N. THE USE OF THE EYE LENS TECHNIQUE IN DERIVING THE AGE STRUCTURE AND LIFE TABLE OF AN IMPALA *(AEPYCEROS MELAMPUS)* POPULATION. *Koedoe* no. 12. p. 90-96. 1969. *WR 137: 36*
A study of the age structure of an impala population where 889 mature animals were aged by the eye lens technique, the younger age classes being determined from differential counts on 11,000 animals. A life table derived from these data is presented and discussed in relation to yield prediction and population stability where a cropping program is to be introduced.--From summ.

Fellay, Rene. IMPLANTATION ET TRANSPLANTATION DU BOUQUETIN EN VALAIS *(CAPRA IBEX* L.). [ESTABLISHMENT AND TRANSPORTATION OF THE IBEX IN VALAIS (SWITZERLAND) *(CAPRA IBEX).*] *Bull. Murithienne* 84: 25-39. 1967. [From Biol. Abstr. 50(23), 1969. In French.] *WR 137: 36*
The original wild mountain goats (ibex) of the Swiss alps were virtually extinct in the mid-19th century. Since about 1928 various ibex colonies have been reestablished in Valais in 14 locations, which totaled 1130 animals in 1967. A plea for their protection is made.

Field, C. R. THE FOOD HABITS OF SOME WILD UNGULATES IN RELATION TO LAND USE AND MANAGEMENT. *East African Agr. & Forestry J.* 33(spec. issue): 159-162. June 1968. *WR 137: 37*

[Queen Elizabeth Natl. Park, Uganda.] *"Hippopotamus amphibius, Syncerus c. caffer, Kobus defassa, Damaliscus korrigum jimela, Adenota kob thomasi, Phacochoerus aethiopicus,* and *Loxodonta africana."*

Fischer, Wayne A. OBSERVATIONS ON BEHAVIOR OF LONE BULL BISON. *Proc. Iowa Acad. Sci.* 74: 87-91. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 37*

Freeman, G. H., and J. M. King. RELATIONS AMONGST VARIOUS LINEAR MEASUREMENTS AND WEIGHT FOR BLACK RHINOCEROSES IN KENYA. *East African Wildl. J.* 7: 67-72, 2 figs. Aug. 1969. *WR 137: 37*

[East African Agr. & Forestry Res. Org., P.O. Box 31048, Nairobi, Kenya.]

Goddard, John. AERIAL CENSUS OF BLACK RHINOCEROS USING STRATIFIED RANDOM SAMPLING. *East African Wildl. J.* 7: 105-114, 1 fig. + 2 pls. Aug. 1969. *WR 137: 37*

[Dept. Lands & Forests, Parliament Bldg., Toronto, Ontario, Canada.]

Gross, Jack E. OPTIMUM YIELD IN DEER AND ELK POPULATIONS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 372-387, 5 figs. 1969. *WR 137: 37*

[Colo. Coop. Wildl. Res. Unit, Fort Collins.] Fecundity-rate responses to density changes in deer and elk populations appear to be density dependent at higher densities and thus provide the only mechanism necessary for populations to conform to the conceptual optimum-yield model. Fecundity rates and the net number of young produced per unit of breeding stock declines at high densities, and thus total net production is decreasingly proportional to breeding-stock size. The maximum net annual production of young by the population occurs when the product of increasing breeding-stock size and decreasing net production of young per unit of breeding stock is maximum. Net annual production of young by the population declines as the population size continues to increase and net production per unit of breeding stock continues to decrease, thereby producing the dome-shaped yield curve. At optimum-yield density, a population's demand for food is below the level where demand might tax the habitat's supply and thus nutritional crises are not likely to occur. Fecundity rates appear to be a sensitive monitor of the balance between population food demand and habitat food supply, and may be used as discrete and reliable measures for manipulating a population to desired densities.--From summ.

Hamilton, P. H., and J. M. King. THE FATE OF BLACK RHINOCEROSES RELEASED IN NAIROBI NATIONAL PARK. *East African Wildl. J.* 7: 73-83, 4 figs. + 2 pls. Aug. 1969. *WR 137: 37*

[P.O. Box 30333, Nairobi, Kenya.] Summary: Information on the black rhinoceros population of Nairobi National Park has been obtained from two-month surveys in 1967 and 1968 backed by data collected at random over the past few years. It proved impossible to identify some of the rhinoceroses whose presence was indicated by spoor and unidentified sightings, and an estimate of the total number present at the end of 1968 must vary between 27 and 33 animals. Twenty-two rhinoceroses have been brought into the Park by the Game Department Capture Unit since November 1966. The fate of these animals has been: two dead, two not seen and 18 identified in the Park 3-33 months after release. The newcomers have produced only one serious conflict with a resident rhinoceros and two collisions with motor vehicles. Despite the small size of the Park, the inadequacy of its boundaries and the legendary intolerance of the species, it would appear that the translocation operations have been a success.

Hanks, J. THE CAPTURE OF YOUNG ELEPHANT IN THE ZAMBESI VALLEY. *Puku* no. 5. p. 87-90. 1969. *WR 137: 37*

[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.] Summary: Ten young elephant were captured in the Zambezi Valley without loss by immobilising them

with a mixture of Etorphine (M.99) and acetylpromazine. One animal was captured by using Etorphine alone. Cyprenorphine (M.285) was used throughout as an antidote. All darts containing the immobilising mixture were fired with a crossbow from a helicopter.

Hanks, J. GROWTH IN WEIGHT OF THE FEMALE AFRICAN ELEPHANT IN ZAMBIA. *East African Wildl. J.* 7: 7-10, 3 figs. Aug. 1969. *WR 137: 38*
[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.]

Hanks, J. SEASONAL BREEDING OF THE AFRICAN ELEPHANT IN ZAMBIA. *East African Wildl. J.* 7: 167, 1 fig. Aug. 1969. *WR 137: 38*
[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.]

Hanks, J., and R. J. Dowsett. THE USE OF ETORPHINE (M.99) FOR THE IMMOBILISATION AND TRANSLOCATION OF THE PUKU, *KOBUS VARDONI*. *Puku* no. 5. p. 123-130, 2 [figs.]. 1969. *WR 137: 38*
[Agr. Res. Council, P.O. Box 49, Chilanga, Zambia.] Summary: Results obtained in the immobilisation of 52 puku for both translocation and marking are discussed in detail. Only one animal died as a direct result of the drug combination used. It is concluded that Etorphine in combination with small amounts of Acetylpromazine forms the best "cocktail" for the capture of this species, and that weight for weight puku require almost twice as much Etorphine as the Defassa waterbuck, a related species.

Hibbs, Dale, Fred A. Glover, and Douglas L. Gilbert. THE MOUNTAIN GOAT IN COLORADO. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 409-418, 1 fig. 1969. *WR 137: 38*
[Colo. Game, Fish & Parks Div., Denver.] *"Oreamnos americanus."*

Hitchins, P. M. INFLUENCE OF VEGETATION TYPES ON SIZES OF HOME RANGES OF BLACK RHINOCEROS IN HLUHLUWE GAME RESERVE, ZULULAND. *Lammergeyer* no. 10. p. 81-86, 4 [figs.]. June 1969. *WR 137: 38*
"Savanna" type home range was found to be 1.7 times as large as that situated in "thicket."

Iglesias, Rafael E. PARA LA SALVACION DEL VENADO ACTUA UNA INSTITUCION CONSERVACIONISTA. [A CONSERVATION INSTITUTION ACTS TO SAVE THE DEER.] *An. Soc. Rural Argentina* 102(8): 25, 27-28, illus. 1968. [From Biol. Abstr. 50(22), 1969. In Spanish.] *WR 137: 38*

Isaković, Ivan. MORFOLOGIJA JELENJIH PAROGOVA BELJA. [ANTLER MORPHOLOGY IN THE RED DEER FROM BELJE.] *Jelen* 8: 5-59, 15 figs. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 38*

Jenkins, David, and Heinrich III Prinz Reusz. A SUCCESSFUL CASE-HISTORY RECONCILING FORESTRY AND RED DEER MANAGEMENT. *Forestry* 42(1): 21-27, illus. 1969. [From Biol. Abstr. 50(21), 1969.] *WR 137: 38*
[Nature Conservancy, Edinburgh, Scotland.]

Keep, M. E., J. L. Tinley, K. Rochat, and J. V. Clark. THE IMMOBILIZATION AND TRANSLOCATION OF BLACK RHINOCEROSES *DICEROS BICORNIS* USING ETORPHINE HYDROCHLORIDE (M99). *Lammergeyer* no. 10. p. 4-11. June 1969. *WR 137: 38*
Etorphine was used with hyoscine, hydrobromide and various tranquilizers on 14 black rhinoceroses.

King, J. M. THE CAPTURE AND TRANSLOCATION OF THE BLACK RHINOCEROS. *East African Wildl. J.* 7: 115-130, 1 fig. + 2 pls. Aug. 1969. *WR 137: 38*
[Game Dept., P.O. Box 241, Nairobi, Kenya.]

Kotov, V. A. [A HARD WINTER FOR WILD UNGULATE ANIMALS IN THE CAUCASIAN PRESERVE.] *Bull. Moscow Soc. Naturalists Biol. Ser.* 74(1): 57-61. 1969. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 38*

Kuznetsov, G. V. [ON THE DIURNAL RHYTHM OF ACTIVITY OF UNGULATE ANIMALS.] *Bull. Moscow Soc. Naturaliste Biol. Ser.* 74(1): 47-56. 1969. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 39*

Laws, R. M. INTERACTIONS BETWEEN ELÆPHANT AND HIPPOPOTAMUS POPULATIONS AND THEIR ENVIRONMENTS. *East African Agr. & Forestry J.* 33(spec. issue): 140-147. June 1968. *WR 137: 39*
[Tsavo Res. Project, Kenya.]

Lent, P. C. A PRELIMINARY STUDY OF THE OKAVANGO LECHWE, *(KOBUS LECHE LECHE* GRAY*). East African Wildl. J.* 7: 147-157, 5 figs. Aug. 1969. *WR 137: 39*
[Alaska Coop. Wildl. Res. Unit, College.] Group composition, daily activity cycle, predation, fright reactions, breeding behavior, agonistic behavior, and calving and related behavior of *Kobus leche leche.*

Matschke, George H., and Vernon G. Henry. IMMOBILIZING EUROPEAN WILD HOGS WITH SUCCINYLCHOLINE CHLORIDE. *J. Wildl. Mgmt.* 33(4): 1039-1041, 1 fig. Oct. 1969. *WR 137: 39*
[Denver Wildl. Res. Center, Denver, Colo.] Abstract: Sixty-three pen-reared European wild hogs *(Sus scrofa)* were injected one or several times for a total of 92 injections with succinylcholine chloride at doses ranging from 0.1 to 6.7 mg/lb. Thirty-eight hogs (41 percent) died from overdosages; at the lowest effective level, 0.3 mg/lb, 3 of 13 animals died (23 percent). In only 32 (35 percent) of the observations were the hogs successfully immobilized. The time elapsed from injection to immobilization averaged 97 ± 10 seconds (range 30-250 seconds) and that from injection to recovery averaged 25.6 ± 7.4 minutes (range 3.5-134 minutes). In most cases, hogs that survived the first dose could be immobilized at a wider range of dose levels without mortality. Two animals were unaffected at doses of over 3 mg/lb. An anesthetic index of only 2.6 indicates that succinylcholine chloride has a very narrow safety margin for European wild hogs.

McCullagh, K. THE GROWTH AND NUTRITION OF THE AFRICAN ELEPHANT. I. SEASONAL VARIATIONS IN THE RATE OF GROWTH AND THE URINARY EXCRETION OF HYDROXYPROLINE. *East African Wildl. J.* 7: 85-90, 3 figs. Aug. 1969. *WR 137: 39*
[Dunn Nutritional Lab., Milton Road, Cambridge, England.]

McCullagh, K. THE GROWTH AND NUTRITION OF THE AFRICAN ELEPHANT. II. THE CHEMICAL NATURE OF THE DIET. *East African Wildl. J.* 7: 91-97, 1 fig. Aug. 1969. *WR 137: 39*
[Dunn Nutritional Lab., Milton Road, Cambridge, England.]

Nagy, Julius G., Thomas A. Barber, and Albert E. McChesney. *CLOSTRIDIUM PERFRINGENS* ENTEROTOXEMIA IN HAND-REARED ANTELOPE. *J. Wildl. Mgmt.* 33(4): 1032-1033. Oct. 1969. *WR 137: 39*
[Colo. State Univ., Fort Collins.] Abstract: Enterotoxemia caused by *Clostridium perfringens* was responsible for the death of a 2-month old hand-reared antelope *(Antilocapra americana).* This case of enterotoxemia and other digestive upsets occurred as a group of antelope fawns began to consume solid food along with their milk diet. Symptoms of the disease and preventive treatment given to the animals is discussed.

Naumov, N. P., and L. M. Baskin. [LEADERSHIP IN HERDS OF REINDEER AS GROUP ADAPTATION.] *Zhur. Obshch. Biol.* 30(2): 147-156, illus. 1969. [From Biol. Abstr. 50(18), 1969. In Russian with English summ.] *WR 137: 39*
[Moscow State Univ., Moscow, USSR.]

Osmolovaskaya, V. I., and E. V. Fadeev. [DISTRIBUTION AND NUMBERS OF MOOSE IN THE EUROPEAN PART OF THE USSR.] *Zool. Zhur.* 47(12): 1875-1877. 1968. [From J. Mammal. 50(4), 1969. In Russian with English summ.] *WR 137: 39*

Petrović, Zlatibor, and Stojan Popović. FAUNA EKTOPARAZITA JELENA *(CERVUS ELAPHUS)*, SRNE *(CAPREOLUS CAPREOLUS)* I DIVLJE SVINJE *(SUS SCROFA* L.*)* NA BELJU. [FAUNA OF ECTOPARASITES ON RED AND ROE DEER AND BOARS IN BELJE REGION.] *Jelen* 8: 129-134, 3 figs. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 40*

Pienaar, U. de V. RECENT ADVANCES IN THE FIELD IMMOBILIZATION AND RESTRAINT OF WILD UNGULATES IN SOUTH AFRICAN NATIONAL PARKS. *Acta Zool. Pathol. Antverpiensia* 46: 17-38, illus. 1968. [From Biol. Abstr. 50(21), 1969. In English with Dutch, French, and German summ.] *WR 137: 40*
[Kruger Natl. Park, Skukuza, South Africa.]

Pienaar, U. de V. OBSERVATIONS ON DEVELOPMENTAL BIOLOGY, GROWTH AND SOME ASPECTS OF THE POPULATION ECOLOGY OF AFRICAN BUFFALO *(SYNCERUS CAFFER CAFFER* SPARRMAN*)* IN THE KRUGER NATIONAL PARK. *Koedoe* no. 12. p. 29-52 + fold-out tables and 56 figs. on pls. 1969. *WR 137: 40*
Summary: A random sample of 100 buffalo was collected from the large Crocodile Bridge population in the Kruger Park by means of drug darts. Data recorded during this pilot culling operation shed additional light on such aspects of the population ecology of buffalo as natural sex ratios; age structure of the population; size category characteristics such as body measurements, weight, growth and development; reproduction; food and water requirements; mortality factors (including predation and diseases); and annual increments to the population. The annual recruitment rate and the factors affecting it, provide a basis for establishing future culling ceilings for this and other populations. A number of physical characteristics are also described which may be of use as field age criteria.

Pienaar, U. de V. PREDATOR-PREY RELATIONSHIPS AMONGST THE LARGER MAMMALS OF THE KRUGER NATIONAL PARK. *Koedoe* no. 12. p. 108-176, 4 figs. + fold-out tables and 12 pls. 1969. *WR 137: 40*
Records of carcasses found in the Kruger Park during the periods 1935-46 and 1954-66 have been used as a basis for tables which should provide a clearer insight into predator-prey relationships amongst larger mammals in this area. A margin of error has been allowed and vegetation types, habitats and density of both predator and prey populations have been taken into consideration. Predators are divided into true predators (lion, leopard, cheetah, wild dog), scavenger-predators (hyaenas and jackals), and minor predators (crocodile, caracal, serval, baboon, python and martial eagle). For each predator the following information is given: numbers in the Kruger Park, range of prey species, preferred prey species, influence of population density of prey species on predation, the estimated kill frequency per annum per predator, hunting characteristics and methods, hunting range, size of pride or pack, and predation as a limiting agency in population increase or decline.--From summ.

Retfalvi, Laszlo. SEXUAL DIMORPHISM IN FETUSES OF WAPITI, *CERVUS CANADENSIS*. *Canadian J. Zool.* 47(6): 1418-1419. Nov. 1969. *WR 137: 40*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Abstract: Standard measurements of 133 wapiti fetuses from Jasper and Banff National Park were analyzed. Neck girths of male specimens significantly differed from neck girths of female specimens. The larger neck girth measurements of males was interpreted as evidence of sexual dimorphism and was attributed to faster growth rate of male fetuses.

Robinette, W. L. SOME ECOLOGICAL CONSIDERATIONS IN MANAGING BIG GAME. *East African Agr. & Forestry J.* 33(spec. issue): 114-117. June 1968. *WR 137: 40*
[Coll. African Wildl. Mgmt., Mweka, Tanzania.]

Rogers, Dilwyn J., and H. J. McAllister. PREFERENTIAL GRAZING BY GAME ON A FUNGUS "FAIRY RING." *J. Wildl. Mgmt.* 33(4): 1034-1036. Oct. 1969. *WR 137: 40*
[Augustana Coll., Sioux Falls, S. Dak.] "Grey rhebok, blesbok, and oribi in South Africa."

Ross, I. C. GAME DISTRIBUTION IN THE KIDEPO VALLEY NATIONAL PARK. *East African Wildl. J.* 7: 171-174, 4 figs. Aug. 1969. *WR 137: 41*
[Kidepo Valley Natl. Park, Private Bag, Kitgum, Uganda.] Results of monthly aerial surveys of distribution of big game in NE Uganda.

Savidge, J. M. ELEPHANTS IN THE RUAHA NATIONAL PARK, TANZANIA--MANAGEMENT PROBLEM. *East African Agr. & Forestry J.* 33(spec. issue): 191-196. June 1968. *WR 137: 41*
[Tanzania Natl. Parks, P.O. Box 369, Iringa, Tanzania.]

Snyder, Walter. ANTELOPE HUNTING, 1969. *N. Mex. Wildl.* 15(1): 9-11, illus. Jan.-Feb. 1970. *WR 137: 41*
Includes a comparison of hunting pressure, antelope harvest and hunters success for the period 1964-1969 in New Mexico. The antelope harvest during 1969 was 1595 with a hunter success of 84%.

Spinage, C. A. REPRODUCTION IN THE UGANDA DEFASSA WATERBUCK, *KOBUS DEFASSA UGANDAE* NEUMANN. *J. Reprod. Fert.* 18(3): 445-457, illus. 1969. [From Biol. Abstr. 50(24), 1969.] *WR 137: 41*
[British High Comm., Kampala, Uganda.]

Tulloch, D. G. HOME RANGE IN FERAL WATER BUFFALO, *BUBALUS BUBALIS* LYDEKKER. *Australian J. Zool.* 17(1): 143-152, illus. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 41*
[Anim. Ind. & Agr. Br., Darwin, Northern Territory, Australia.]

Tyndale-Biscoe, C. H., and R. F. C. Smith. STUDIES ON THE MARSUPIAL GLIDER, *SCHOINOBATES VOLANS* (KERR). III. RESPONSE TO HABITAT DESTRUCTION. *J. Animal Ecol.* 38(3): 651-659, 4 figs. Oct. 1969. *WR 137: 41*
[Univ. Alberta, Edmonton, Alberta, Canada.]

van Zyl, J. H. M. MEAT PRODUCTION OF SOUTH AFRICAN GAME ANIMALS. 3. THE SPRINGBOK *(ANTIDORCAS MARSUPIALIS* ZIMMERMANN). *Fauna & Flora* 19: 51-57. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 41*

Vesey-FitzGerald, D. F. AN EXPERIMENT IN ADAPTING AN ELECTRIC FENCE TO ELEPHANT BEHAVIOUR. *East African Agr. & Forestry J.* 33(spec. issue): 185-190, 2 figs. June 1968. *WR 137: 41*
[Monela, P.O. Box 3134, Arusha, Tanzania.]

Vesey-FitzGerald, Desmond Foster. UTILIZATION OF THE HABITAT BY BUFFALO IN LAKE MANYARA NATIONAL PARK. *East African Wildl. J.* 7: 131-145, 5 figs. Aug. 1969. *WR 137: 41*
[Monela, P.O. Box 3134, Arusha, Tanzania.]

Vincent, John. THE STATUS OF THE SQUARE-LIPPED RHINOCEROS, *CERATOTHERIUM SIMUM SIMUM* (BURCHELL), IN ZULULAND. *Lammergeyer* no. 10. p. 12-21, 2 figs. June 1969. *WR 137: 41*
Compilation of census results since 1959. Present rate of increase of the population is about 10% per annum.

Visagie, G. P. THE TRANSPORTATION OF LIVE BLESBOK *(DAMALISCUS DORCAS* PHILLIPS) [MANAGEMENT]. *Fauna Flora (Transvaal)* 19: 58-60, illus. 1968. [From Biol. Abstr. 50(23), 1969.] *WR 137: 41*

Watson, R. M., A. D. Graham, and I. S. C. Parker. A CENSUS OF THE LARGE MAMMALS OF LOLIONDO CONTROLLED AREA, NORTHERN TANZANIA. *East African Wildl. J.* 7: 43-59, 5 figs. Aug. 1969. *WR 137: 41*
[P.O. Box 15068, Nairobi, Kenya.]

Watson, R. M., I. S. C. Parker, and T. Allan. A CENSUS OF ELEPHANT AND OTHER LARGE MAMMALS IN THE MKOMAZI REGION OF NORTHERN TANZANIA AND SOUTHERN KENYA. *East African Wildl. J.* 7: 11-26, 6 figs. Aug. 1969. *WR 137: 42*

[P.O. Box 15068, Nairobi, Kenya.] Strip samples were selected at random for the various strata and elephant and other large mammals were counted in a strip of 440 m width from an aircraft traveling 100 m above the ground at 130 km/h. Elephant, eland, kongoni, Grant's gazelle, buffalo, oryx, zebra, impala, ostrich and giraffe have been counted. A discussion is held on the influences of various factors on the width of sample strips observed from the aircraft. The elephant population is of the order of 9,000 animals, as was predicted from observation flights, and the confidence interval of ±1,974 is acceptable for a first attempt at a sample count for elephant. The Mkomazi elephant were observed in three distinguishable groups, this being a distribution pattern frequently recorded since 1965. The census took 45 hours, and cost KP800. It was accomplished in 7 days by a single pilot and observer. The Mkomazi region covers some 10,857 km^2. --From summ.

Wyk, P. Van, and N. Fairall. THE INFLUENCE OF THE AFRICAN ELEPHANT ON THE VEGETATION OF THE KRUGER NATIONAL PARK. *Koedoe* no. 12. p. 57-89, 4 figs. 1969. *WR 137: 42*

DEER (Odocoileus)

Bowden, David C., Allen E. Anderson, and Dean E. Medin. FREQUENCY DISTRIBUTIONS OF MULE DEER FECAL GROUP COUNTS. *J. Wildl. Mgmt.* 33(40): 895-905. Oct. 1969. *WR 137: 42*

[Colo. State Univ., Fort Collins.] Abstract: The Poisson, Neyman type A, negative binomial, and the Thomas distributions were fitted to the frequency distributions of the number of fecal groups per plot for mule deer *(Odocoileus hemionus)* counted on a systematic sample of 960, 100 ft^2, and 1,687, 43.6 ft^2, circular plots on two diverse Colorado habitats sampled over two seasons. The three latter distributions represented fecal-group data equally well. However, there was a consistent appearance of one or two high frequencies with very small probability of occurrence under the three distributions regardless of plot size, sampling intensity, habitat, or season of fecal-group deposition. Fecal-group densities were too low to distinguish between the three distributions, but the negative binomial offered the simplest explanation of the data, and appropriate standard errors and confidence limits may be readily computed. The two following modes of deer behavior (or a combination of the two) could give rise to any of the three distributions: (1) deer wandering at random over the sampled area in groups of various sizes, and (2) single deer wandering at random within homogeneous blocks of land but a different mean rate for each block.

Bridges, Robert J., and R. Larry Marchinton. WINTER AND SPRING MOVEMENT OF INDIVIDUAL WHITE-TAILED DEER ON EGLIN RESERVATION, FLORIDA. *Bull. Ga. Acad. Sci.* 27(2): 83. Apr. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 42*

Abstract only.

Brunetti, Oscar A. REDESCRIPTION OF *PARELAPHOSTRONGYLUS* (BOEV AND SCHULS, 1950) IN CALIFORNIA DEER, WITH STUDIES ON ITS LIFE HISTORY AND PATHOLOGY. *Calif. Fish & Game* 55(4): 307-316, 7 figs. Oct. 1969. *WR 137: 42*

Dickinson, Nathaniel R., and C. W. Severinghaus. THE 1967 DEER SEASON IN THE MOOSE RIVER RECREATION AREA. *N.Y. Fish & Game J.* 16(1): 1-18 + 1 fig. Jan. 1969. *WR 137: 42*

Analysis of deer harvest data and hunter information.

Gill, R. Bruce. AN APOLOGY FOR A DEER SEASON. *Colo. Outdoors* 18(6): 30-33, [2 figs.]. Nov.-Dec. 1969. *WR 137: 42*

[Colo. Div. Game, Fish & Parks, Denver.] Liberal deer seasons are being scheduled in spite of reduced populations in order to keep the deer herd within the carrying capacity of the land.

Harrington, Bob. COLLARS, RADIOS AND CUTTINGS. *Mich. Nat. Resources* 38(6): 13-17, illus. Nov.-Dec. 1969. *WR 137: 43*
An estimated 500 deer have snared themselves with numbered nylon collars.

Haugen, Arnold O. INCIDENCE OF SOME DISEASE ANTIBODIES IN IOWA DEER. *Proc. Iowa Acad. Sci.* 74: 78-86. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 43*

Hawn, Louis J., and Lawrence A. Ryel. MICHIGAN DEER HARVEST ESTIMATES: SAMPLE SURVEYS VERSUS A COMPLETE COUNT. *J. Wildl. Mgmt.* 33(4): 871-880. Oct. 1969. *WR 137: 43*
[Mich. Dept. Nat. Resources, Lansing.] Abstract: The Michigan Department of Natural Resources recently conducted two types of surveys to determine the 1966 legal kill of white-tailed deer *(Odocoileus virginianus)* by hunters. One of the survey methods utilized sampling, the other was an attempt at complete enumeration. The surveys resulted in a classic illustration of textbook pedagogy (Cochran 1953, Deming 1960) on the subject of sampling versus complete enumeration. We found that sample surveys do in fact have the following advantages over complete enumeration; (1) reduced cost; (2) greater speed; (3) greater scope; (4) greater accuracy.

Hesselton, William T. THE INCREDIBLE WHITE DEER HERD. [*N.Y.*] *Conservationist* 24(2): 118-119, illus. Oct.-Nov. 1969. *WR 137: 43*
An account of the growth of the white deer segment of the Seneca Army Depot herd from 7 animals in 1960 to 155 in 1968. Currently there are about four brown deer present for each white deer.

Howard, George P., Jr. TO NET A DEER FAWN / AN EXPERIMENTAL WHITE-TAILED DEER FAWN TAGGING PROGRAM. *N.J. Outdoors* 20(6): 21-24, illus. Dec. 1969. *WR 137: 43*
Newborn fawns are captured with hoop nets and tagged for an overall deer capture and marking program.

Kirkpatrick, R. L., J. P. Fontenot, and R. F. Harlow. SEASONAL CHANGES IN RUMEN CHEMICAL COMPONENTS AS RELATED TO FORAGES CONSUMED BY WHITE-TAILED DEER OF THE SOUTHEAST. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 229-238. 1969. *WR 137: 43*
[Va. Polytechnic Inst., Blacksburg.] Leaves of woody plants and herbaceous stems and leaves comprised the major part of the spring diet, whereas leaves of woody plants and mushrooms formed the bulk of food consumed during the summer months. Acorns were the largest component of the fall diet comprising over 60% of the total identifiable items consumed. The winter diet proved to be the most varied, with leaves of woody plants, acorns and grasses and legumes contributing the major portion. Dry matter and the various chemical components of the rumen digesta remained relatively constant from spring to summer in all six areas. Fall samples were markedly different, however, having higher dry matter and nitrogen-free extract and lower crude protein and ash values. Crude fiber values increased only slightly during the fall and winter months, and crude fat remained relatively constant during all four seasons. Crude protein and nitrogen-free extract values for the winter months were intermediate between the spring-summer and fall levels. Seasonal changes in estimated physical condition indicated that deer were in better condition in the fall and winter than in spring and summer.--From summ.

Kistner, Theodore P. A STUDY TO DETERMINE THE ROLE OF WHITE-TAILED DEER AS RESERVOIR HOSTS OF CATTLE FEVER TICKS. *M.S. thesis, Univ. Ga.* viii + 73 p., 2 figs. May 1969. *WR 137: 43*
Although white-tailed deer constitute a host species for *Boophilus microplus*, the arthropod can be eliminated by dipping cattle where deer and cattle cohabit the same range. Deer depopulation measures may be necessary in infested areas where cattle are excluded. Mongoose, blackbird, dove, and cattle egret appear to be poor transport hosts for the fever tick.--From summ.

Krefting, Laurits W., and Henry L. Hansen. INCREASING BROWSE FOR DEER BY AERIAL APPLICATIONS OF 2,4-D. *J. Wildl. Mgmt.* 33(4): 784-790. Oct. 1969. *WR 137: 44*

[Bur. Sport Fisheries & Wildl., St. Paul, Minn.] Abstract: The effectiveness of aerial applications of 2,4-D (2,4-dichlorophenoxyacetic acid) in reducing the population of hazel *(Corylus* spp.*)* and other low-preference browse species and increasing the supply of the better browse plants for white-tailed deer *(Odocoileus virginianus)* was studied from 1958 to 1966 in each of four cover types in Minnesota. Stem counts after 2 years and dry-weight determinations after 6 years, showed that the proportion and total abundance of the better browse plants was greater on sprayed than on control plots. Browse production after spraying varied from 22 lb on the unsprayed jack pine *(Pinus banksiana)* plot to 90 lb per acre on the sprayed upland-brush plot. The abundance of grasses and sedges increased on all sprayed plots, though a decline began after about 4 years following spraying. The response by other herbaceous species varied by species and cover type. Deer were attracted to sprayed plots for winter browsing and summer bedding. Pellet groups were still more abundant on the treated than on untreated areas, especially in the aspen type, when the study was terminated 8 years after spraying.

Kuttler, K. L., R. M. Robinson, and T. E. Franklin. SEROLOGICAL RESPONSE TO *ANAPLASMA MARGINALE* INFECTION IN SPLENECTOMIZED DEER *(ODOCOILEUS VIRGINIANUS)* AS MEASURED BY THE COMPLEMENT-FIXATION AND CAPILLARY-TUBE AGGLUTINATION TESTS. Reprint from *Proc. 5th Natl. Anaplasmosis Conf. 28-29 Feb. 1968* (Stillwater, Okla.). p. 82-88, 1 fig. [1968.] *WR 137: 44*

Induced *Anaplasma marginale* infections in splenectomized deer were characterized by a demonstrable parasitemia and an accompanying serological response to both capillary-tube agglutination (CA) and complement-fixation (CF) antigens. A close relationship between parasitemia and CF serum titers was noted during the development of infection and to the point where packed cell volumes reached a low. Thereafter the rate at which parasitemia disappeared was much faster than the corresponding decline in serum CF titers.--From summ.

Liscinsky, Stephen A., George P. Howard, and Robert B. Waldeisen. A NEW DEVICE FOR INJECTING POWDERED DRUGS. *J. Wildl. Mgmt.* 33(4): 1037-1038, 1 fig. Oct. 1969. *WR 137: 44*

[Pa. Game Comm., Harrisburg.] Abstract: A device for administering powdered drugs to animals from distances up to 50 yards is described. The dart can be shot from guns having a bore diameter of 0.5 inch. Field tests on 101 white-tailed deer *(Odocoileus virginianus)* have demonstrated the effectiveness of using powdered succinylcholine chloride in this device. Of this number, 76 were satisfactorily immobilized, 14 were not affected because of under dosages or malfunctioning of equipment, and 11 died from over dosages and/or injuries.

Longhurst, W. M., J. H. Oh, M. B. Jones, and R. E. Kepner. DEER FORAGE PALATABILITY, DIGESTIBILITY AND MANAGEMENT IMPLICATIONS. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 1-7. 1969. *WR 137: 44*

[Univ. Calif., Davis.]

Lund, Robert C. FAWNS, YEARLINGS, AND ADULTS. AN EVALUATION OF DATA COLLECTED DURING THE 1968 DEER SEASONS. *N.J. Outdoors* 20(5): 19-25, illus. Nov. 1969. *WR 137: 44*

An analysis of the 38.3% sample of the total reported deer kill in N.J. during the 6-day buck and 1-day either sex season of 1968. Variations in percent of yearlings killed by regions are correlated with autumn acorn crop.

McCaffery, Keith R., and William A. Creed. SIGNIFICANCE OF FOREST OPENINGS TO DEER IN NORTHERN WISCONSIN. *Wis. Dept. Nat. Resources Tech. Bull.* no. 44. 104 p., [50 figs.]. 1969. *WR 137: 44*

[Wis. Dept. Nat. Resources, Rhinelander.] All areas studied showed consistently higher deer activity in aspen than in northern hardwoods. Deer activity was significantly higher in northern hardwoods with permanent grassy openings

than in closed hardwood stands. Deer activity in forest openings is highest during spring and fall, and appears to be related to seasonal forage preferences. Small openings less than 5 acres or 5 chains in width, were used more intensively by deer than larger openings.--From abstr.

McCulloch, Clay Y. SOME EFFECTS OF WILDFIRE ON DEER HABITAT IN PINYON-JUNIPER WOODLAND. *J. Wildl. Mgmt.* 33(4): 778-784, 1 fig. Oct. 1969. *WR 137: 45*
[Ariz. Game & Fish Dept., Tempe.] Abstract: Mule deer *(Odocoileus hemionus)* habitat conditions were observed during 1966-68 on a 50-square-mile plateau of pinyon-juniper woodland, half of which was previously burned by crown fires. Deer droppings were abundant in a sampled strip 1/8 mile wide by 11 miles long that included both burned and unburned areas. Accumulation rates of deer pellet groups were greater in the burned than in the unburned parts of the strip. The droppings accumulated at high rates in a burned zone 1/4 to 1/2 mile from the edge of unburned woodland. Despite the large acreage burned, only 5 percent of it was more than 1/2 mile from unburned areas. At 13-15 years after fire, the burned area had virtually no cliffrose *(Cowania mexicana)*, a key browse species on nearby unburned range of pinyon-juniper type. Non-browse items including grasses were 85 percent of the contents of deer rumens collected from burned sites in autumn. The increased grass yields on burns benefitted cattle. The plateau and adjacent territory appeared to have a dense population of deer. For the limited purpose of producing both cattle and deer, extensive crown fires seemed acceptable as a range improvement technique in remote woodland near precipitous terrain like that of the Grand Canyon.

Nagy, Julius G., Thomas Hakonson, and Kirvin L. Knox. EFFECTS OF QUALITY ON FOOD INTAKE IN DEER. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 146-154. 1969. *WR 137: 45*
[Colo. State Univ., Fort Collins.]

Ozoga, John J. SOME LONGEVITY RECORDS FOR FEMALE WHITE-TAILED DEER IN NORTHERN MICHIGAN. *J. Wildl. Mgmt.* 33(4): 1027-1028. Oct. 1969. *WR 137: 45*
[Mich. Dept. Nat. Resources, Shingleton.] Abstract: Longevity records are presented for 14 ear-tagged wild female white-tailed deer *(Odocoileus virginianus)* known to be from 9 to nearly 15 years of age at the time of their final handling. Two were taken by hunters, 12 were recovered when they returned to the winter deeryard.

Peterson, William J. A LITERATURE REVIEW ON DEER HARVEST. *Colo. Div. Game, Fish & Parks Spec. Rept.* no. 22. iv + 15 p. Aug. 1969. Price $1.00. *WR 137: 45*
Abstract: Two major factors affecting harvest, deer distribution and hunter distribution, are discussed. Deer distribution is influenced chiefly by weather and topography. The extremes of snow, wind and temperature alter normal distribution and activities of deer. The upper portions of south and west slopes probably are the most densely occupied places during cold weather because they are warmest, have the least snow, and protect deer from wind. Hunters may cause some deer to seek the best protective cover available. Distribution of hunters is affected by weather, topography, vegetation density, area accessibility, opening date, season and bag limit.

Reynolds, Hudson G. IMPROVEMENT OF DEER HABITAT ON SOUTHWESTERN FOREST LANDS. *J. Forestry* 67(11): 803-805, 2 figs. Nov. 1969. *WR 137: 45*
[Rocky Mountain Forest & Range Expt. Sta., Tempe, Ariz.] Abstract: Tentative suggestions for improving deer habitat include (1) maintaining forest openings and borders, (2) thinning tree practices, (3) minimizing slash cleanup, (4) including forbs and browse in range reseeding practices, and (5) allocating forage between deer and cattle.

Roseberry, J. L., D. C. Autry, W. D. Klimstra, and L. A. Mehrhoff, Jr. A CONTROLLED DEER HUNT ON CRAB ORCHARD NATIONAL WILDLIFE REFUGE. *J. Wildl. Mgmt.* 33(4): 791-795. Oct. 1969. *WR 137: 46*

[Southern Ill. Coop. Wildl. Res. Lab., Carbondale.] Abstract: To reduce a high population of white-tailed deer *(Odocoileus virginianus)* on the closed portion of the Crab Orchard National Wildlife Refuge, Illinois, a 10-day controlled hunt was held during the first three weekends in January, 1966. A total of 3,232 Illinois residents hunted 3,819 times and harvested 1,073 deer. An additional 36 wounded and dead animals were retrieved, and a crippling loss of 350 deer was estimated from post-hunt sampling. Methods were employed during the hunt to achieve maximum recreational benefits consistent with the primary objective of controlled herd reduction.

Samuel, William M. PARASITES OF THE WHITE-TAILED DEER IN SOUTH TEXAS. *Ph.D. thesis, Univ. Wis.* 196 p. 1969. *WR 137: 46*

The presence and abundance of selected deer parasites were compared to: 1) several host factors such as age, sex, and behavior; 2) various external environmental factors including plant habitat-density, temperature and rainfall; and 3) parasite parameters such as age structure and sex ratios.--From abstr.

Samuel, W. M., and D. O. Trainer. A TECHNIQUE FOR SURVEY OF SOME HELMINTH AND PROTOZOAN INFECTIONS OF WHITE-TAILED DEER. *J. Wildl. Mgmt.* 33(4): 888-894, 3 figs. Oct. 1969. *WR 137: 46*

[Univ. Alberta, Edmonton.] Abstract: Utilization of deer pellet-group counting and a fecal flotation procedure for the detection of selected immature parasitic stages provided the first information on the prevalence and distribution of several endoparasites of white-tailed deer *(Odocoileus virginianus)* in Wisconsin. Eggs or larvae of six nematode, one cestode, a complex of abomasal trichostrongyle, and several undescribed coccidial species were detected. Usefulness of the flotation technique was illustrated by comparing parasite prevalence to season and to the host's habitat. The advantages, potential, and limitations of the technique are discussed.

Severinghaus, C. W. MINIMUM DEER POPULATIONS OF THE MOOSE RIVER RECREATION AREA. *N.Y. Fish & Game J.* 16(1): 19-26. Jan. 1969. *WR 137: 46*

"The procedures described afford a means of calculating the minimum deer population on the Moose River Recreation Area in recent years. They may be used similarly for other areas if the prerequisite data concerning the age and sex distribution of deer taken by hunting are available.... Comparison with actual harvests in various areas where essentially the same method has been used during the past 20 years has corroborated the fact that such calculated figures are conservative."

Short, Henry L., John D. Newsom, George L. McCoy, and James F. Fowler. EFFECTS OF NUTRITION AND CLIMATE ON SOUTHERN DEER. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 137-146, 3 figs. 1969. *WR 137: 46*

[Southern Forest Expt. Sta., Nacogdoches, Texas.]

Smith, Ronald H., Don J. Neff, and Clay Y. McCulloch. A MODEL FOR THE INSTALLATION AND USE OF A DEER PELLET GROUP SURVEY. *Ariz. Game & Fish Dept. Res. Div. Spec. Rept.* no. 1. iv + 30 p., 11 figs. June 1969. *WR 137: 46*

Two efficient models are described for installing and reading a pellet group survey system to estimate deer numbers. The proposed models are commonly used sampling methods but have never actually been field tested for pellet group sampling in Arizona in their entirety. The sampling designs are based on theoretical considerations and on the use of field methods for problems other than pellet group sampling. All other parts of the models are the result of the combined experience of several Arizona biologists.--From intro.

Sohn, Arnold J. AN EVALUATION OF THE DENTAL ANNULI TECHNIQUE FOR DETERMINING AGE OF WHITE-TAILED DEER IN IOWA. *Proc. Iowa Acad. Sci.* 74: 72-77. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 46*

Tarchinski, Ramon. THE EFFECTS OF TEMPERATURE, HUMIDITY, AND WIND VELOCITY ON THE NUTRITIONAL REQUIREMENTS OF WHITE-TAILED DEER FAWNS. *M.S. thesis, Mich. Tech. Univ.* 51 p. 1969. *WR 137: 47*
Courtesy/ Norman F. Sloan.

Tierson, William C. CONTROLLING DEER USE OF FOREST VEGETATION WITH ELECTRIC FENCES. *J. Wildl. Mgmt.* 33(4): 922-926, 1 fig. Oct. 1969. *WR 137: 47*
[Syracuse Univ., Syracuse, N.Y.] Abstract: In 1961, an electric fence to control deer *(Odocoileus virginianus)* was erected around a 255-acre part of a 500-acre stand of cut-over northern hardwood forest in the Adirondack Mountains. In addition to the main fence, a 3-acre area was enclosed with an outrigger fence, as recommended by the Vermont Fish and Game Department, to test its effectiveness compared to the main fence. Observations of the outrigger fence indicated that it effectively repelled deer during early winter but was ineffective after 6 inches of snow had accumulated. High resistance to ground in dry snow was measured and the fence was modified by adding wires at ground potential. The main fence was modified in 1962 to include ground wires, and in 1963 to replace solid copper wire with copper-clad steel wire. Track counts and direct observations indicated that the electric fence effectively repelled many deer although numerous observations of deer penetrating the fence were made. Vegetative tallies indicated that deer browsing was significantly *($P<0.05$)* reduced inside the fence. Cost per acre over the study period was $22.47. The efficiency of the electric fence in controlling deer use was considered too marginal to recommend its use as a management tool, and its cost was relatively too high.

Verme, Louis J. REPRODUCTIVE PATTERNS OF WHITE-TAILED DEER RELATED TO NUTRITIONAL PLANE. *J. Wildl. Mgmt.* 33(4): 881-887. Oct. 1969. *WR 137: 47*
[Mich. Dept. Nat. Resources, Shingleton.] Abstract: The breeding season of penned female white-tailed deer *(Odocoileus virginianus)* receiving ample nutrition during autumn was similar to that of does given approximately 30 percent less food. The mean date on which 60 deer bred was November 17 ± 8.4 days; however, 6 of 13 yearling does on inadequate rations failed to achieve estrus. Productivity of low-diet yearlings and prime-age animals amounted to 0.62 and 1.36 fawns per doe, respectively, compared to rates of 1.63 and 1.80 for high-diet deer. Males comprised 70 percent of the births from physically mature mothers on low diet when bred, whereas males constituted 46.7 percent of the offspring conceived by does on high diet. Gestation periods averaged 202.1 ± 4.1 days among 55 does provided with moderately good nutrition during pregnancy; the mean duration probably was related to the fairly large (7.5 ± 1.3 lb) fawns born. Available experimental field evidence indicates there are four general classes of reproduction for Michigan whitetails, depending upon variations in range nutritive quality and winter weather severity; the patterns are described.

MAMMALS--MARINE

Best, P. B., and Ray Gambell. THE ABUNDANCE OF SEI WHALES OFF SOUTH AFRICA. *Norwegian Whaling Gazette* 57(6): 168-174. Nov.-Dec. 1968. [From J. Mammal. 50 (4), 1969.] *WR 137: 47*

Best, Peter B., and Ray Gambell. A COMPARISON OF THE EXTERNAL CHARACTERS OF SPERM WHALES OFF SOUTH AFRICA. *Norwegian Whaling Gazette* 57(6): 146-164. Nov.-Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 47*

Brown, S. G. FEEDING OF SEI WHALES AT SOUTH GEORGIA. *Norwegian Whaling Gazette* 57(6): 118-125. Nov.-Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 47*

Brown, S. G. WHALE MARKS RECOVERED IN THE ANTARCTIC WHALING SEASON 1967/68. *Norwegian Whaling Gazette* 57(6): 139-140. Nov.-Dec. 1968. [From J. Mammal. 50 (4), 1969.] *WR 137: 47*

Bryden, M. M. RELATIVE GROWTH OF THE MAJOR BODY COMPONENTS OF THE SOUTHERN ELEPHANT SEAL, *MIROUNGA LEONINA* (L.). *Australian J. Zool.* 17(1): 153-177, illus. 1969. [From Biol. Abstr. 50(17), 1969.] *WR 137: 48*
[Cornell Univ., Ithaca, N.Y.]

Budd, G. M., and M. C. Downes. POPULATION INCREASE AND BREEDING IN THE KERGUELEN FUR SEAL, *ARCTOCEPHALUS TROPICALIS GAZELLA*, AT HEARD ISLAND. *Mammalia* 33(1): 58-67. Mar. 1969. [From J. Mammal. 50(4), 1969. In English with French summ.] *WR 137: 48*

Budker, Paul, and Charles Roux. THE 1959 SUMMER WHALING SEASON AT CAPE LOPEZ (GABON). *Norwegian Whaling Gazette* 57(6): 141-145. Nov.-Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Caldwell, David K., and Melba C. Caldwell, editors. PROCEEDINGS OF THE SECOND SYMPOSIUM ON DISEASE AND HUSBANDRY OF AQUATIC MAMMALS. *Marineland Res. Lab.* (St. Augustine). p. 1-158. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Cehak, K. C. R. ON HARBOR SEALS *(PHOCA VITULINA)*. *Victoria Naturalist* 25(7): 86-87. Mar. 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Clarke, Robert, Anelio Aguayo L., and Obla Paliza. SPERM WHALES OF THE SOUTHEAST PACIFIC. *Sci. Results Marine Biol. Res.* (Oslo) 51: 1-80. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Cook, H. W., and B. E. Baker. SEAL MILK. I. HARP SEAL *(PAGOPHILUS GROENLANDICUS)* MILK: COMPOSITION AND PESTICIDE RESIDUE CONTENT. *Canadian J. Zool.* 47(6): 1129-1132. Nov. 1969. *WR 137: 48*
[McGill Univ., Macdonald College P.O., Quebec, Canada.] Milk was collected from three harp seals which were caught on the ice floes in the Gulf of St. Lawrence. The gross composition, fatty acid constitution, mineral composition, and pesticide residue content of the milks were determined.

Dollfus, Robert Ph. NEMATODES DES CETACES ODONTOCETES *(GLOBICEPHALUS* ET *TURSIOPS)*. [NEMATODES OF TOOTHED WHALES *(GLOBICEPHALUS* AND *TURSIOPS)*.] *Bull. Inst. Pêches Maritimes Maroc* 16: 35-54. Sept. 1968. [From J. Mammal. 50(4), 1969. In French.] *WR 137: 48*

Gambell, Ray. AERIAL OBSERVATIONS OF SPERM WHALE BEHAVIOR. *Norwegian Whaling Gazette* 57(6): 126-138. Nov.-Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Gihr, Margarete, and Georg Pilleri. RELATIONSHIP BETWEEN BODY LENGTH AND BODY WEIGHT OF *STENELLA STYX* GRAY AND *DELPHINUS DELPHIS* LINNÉ FROM THE WESTERN MEDITERRANEAN. *Rev. Suisse Zool.* 75(4): 813-818 + 1 pl. Dec. 1968. [From J. Mammal. 50(4), 1969. With German summ.] *WR 137: 48*

Grigg, Richard W., and Thomas Dana. ACCIDENTAL ENCOUNTER WITH A WHALE. *J. Mammal.* 50(4): 818-819. Nov. 1969. *WR 137: 48*
[Scripps Inst. Oceanogr., La Jolla, Calif.] "This note describes a diving accident resulting from an encounter between a scuba diver and a California gray whale, *Eschrichtius glaucus*."

Jonsgård, Åge. A REVIEW OF NORWEGIAN BIOLOGICAL RESEARCH ON WHALES IN THE NORTHERN NORTH ATLANTIC OCEAN AFTER THE SECOND WORLD WAR. *Norwegian Whaling Gazette* 57(6): 164-167. Nov.-Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 48*

Mordvinov, Yu. E. [OBSERVATIONS OF LOCOMOTION IN SOME PINNIPEDIA.] *Zool. Zhur.* 47(9): 1394-1402, illus. 1968. [From Biol. Abstr. 50(17), 1969. In Russian with English summ.] *WR 137: 48*
[Inst. Biol. S. Seas., Acad. Sci. Ukr. SSR, Sevastopol, USSR.]

Muller-Willie, Linna L. BIOMETRICAL COMPARISON OF FOUR POPULATIONS OF *PHOCA HISPIDA* SCHREB. IN THE BALTIC AND WHITE SEAS AND LAKES LADOGA AND SAIMAA. *Commentat. Biol. Soc. Sci. Fenn.* 31(3): 1-12, illus. 1969. [From Biol. Abstr. 50(18), 1969.] *WR 137: 49*
[Steinfurter Str. 67, Münster, Germany.]

Norderhaug, Magnar. HVALROSSENS *(ODOBENUS ROSMARUS)* FOREKOMST I SVALBARDOMRADET 1960-1967. [THE WALRUS *(ODOBENUS ROSMARUS)* IN SVALBARD 1960-1967.] *Norsk Polarinst. Arbok 1967.* p. 146-150. 1969. [From Biol. Abstr. 50(17), 1969. In Norwegian with Russian and English summ.] *WR 137: 49*

Paiva, Melquiades Pinto, and Bento Fradique Grangeiro. BIOLOGICAL INVESTIGATIONS ON THE WHALING SEASONS 1960-1963, OFF NORTHEASTERN COAST OF BRAZIL *(BALAENOPTERA, PHYSETER, MEGAPTERA, KOGIA). Arq. Estac. Biol. Mar. Univ. Fed. Ceara* 5(1): 29-64, illus. 1965. [From Biol. Abstr. 50(17), 1969.] *WR 137: 49*
[Univ. Ceara, Fortaleza, Brazil.]

Pastukhov, V. D. [CRANIOMETRIC CHARACTERISTICS OF THE RINGED SEAL *(PUSA SIBIRICA*: PINNIPEDIA, MAMMALIA).] *Zool. Zhur.* 48(5): 722-733, illus. 1969. [From Biol. Abstr. 50(23), 1969. In Russian with English summ.] *WR 137: 49*

Peterson, Richard S., and Burney J. Le Boeuf. FUR SEALS IN CALIFORNIA. *Pacific Discovery* 22(3): 12-15. May-June 1969. [From J. Mammal. 50(4), 1969.] *WR 137: 49*

Peterson, Richard S., and Burney J. Le Boeuf. POPULATION STUDIES OF SEALS AND SEA LIONS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 74-79, 2 figs. 1969. *WR 137: 49*
[Univ. Calif., Santa Cruz.] Censusing, marking, and behavioral studies of *Mirounga angustirostris, Zalophus californianus, Eumetopias jubata, Arctocephalus townsendi,* and *Callorhinus ursinus.*

Pilleri, G., and J. Knuckey. BEHAVIOR PATTERNS OF SOME DELPHINIDAE OBSERVED IN THE WESTERN MEDITERRANEAN. *Z. Tierpsychol.* 26(1): 48-72. Feb. 1969. [From J. Mammal. 50(4), 1969. With German summ.] *WR 137: 49*

Rice, Dale W., and Victor B. Scheffer. A LIST OF THE MARINE MAMMALS OF THE WORLD. *US F&WS, Spec. Sci. Rept.--Fisheries* no. 579. iii + 16 p. Dec. 1968. *WR 137: 49*
Abstract: Listed are 117 species of Recent marine mammals, including freshwater species of the predominantly marine groups. The numbers of species are: Order Carnivora (1), Order Pinnipedia (33), Order Sirenia (5), Order Mysticeti (10), and Order Odontoceti (68). The geographical distribution of each species is shown. The systematic status of little-known species is discussed.

Schevill, William E., William A. Watkins, and Carleton Ray. CLICK STRUCTURE IN THE PORPOISE, *PHOCOENA PHOCOENA. J. Mammal.* 50(4): 721-728, 3 figs. Nov. 1969. *WR 137: 49*
[Woods Hole Oceanogr. Inst., Woods Hole, Mass.] Abstract: The phonation of *Phocoena phocoena* consists of low intensity, narrow-band clicks usually near 2 kilohertz, produced singly or in bursts at repetition-rates as great as about 1000 per second. The higher repetition-rates show as harmonic bands in spectral analysis when relatively narrow analyzing filters are used. Many clicks contain variable emphasis at discrete higher frequencies. The correct name of this species is discussed. We found no evidence of regional variation in phonation ("local accent") in either *P. phocoena* or any of several other cetacean species.

Schreiber, R. W., and E. Kridler. OCCURRENCE OF AN HAWAIIAN MONK SEAL *(MONACHUS SCHAUINSLANDI)* ON JOHNSTON ATOLL, PACIFIC OCEAN. *J. Mammal.* 50(4): 841-842. Nov. 1969. *WR 137: 49*
[Univ. South Fla., Tampa.]

MAMMALS--MARINE--Continued

Vallyathan, N. V., J. C. George, and K. Ronald. THE HARP SEAL, *PAGOPHILUS GROENLANDICUS* (ERXLEBEN, 1777). V. LEVELS OF HAEMOGLOBIN, IRON, CERTAIN METABOLITES AND ENZYMES IN THE BLOOD. *Canadian J. Zool.* 47(6): 1193-1197. Nov. 1969. *WR 137: 50*
[Univ. Guelph, Guelph, Ontario, Canada.]

MAMMALS--OTHER GROUPS

Chippendale, G. M. THE PLANTS GRAZED BY RED KANGAROOS, *MEGALEIA RUFA* (DESMAREST), IN CENTRAL AUSTRALIA. *Proc. Linn. Soc. N.S.W.* 93(1): 98-111, illus. 1968. [From Biol. Abstr. 50(23), 1969.] *WR 137: 50*
[Forest Res. Inst., Canberra, Australia.]

Rowell, T. E. PRIMATES AS A NATURAL RESOURCE: A POSSIBILITY FOR MULTIPLE LAND USE. *East African Agr. & Forestry J.* 33(spec. issue): 279-280. June 1968. *WR 137: 50*
[Makerere Univ. Coll., Kampala, Uganda.]

Taylor, M. E. NOTE ON THE BREEDING OF TWO GENERA OF VIVERRIDS, *GENETTA* SPP. AND *HERPESTES SANGUINEUS*, IN KENYA. *East African Wildl. J.* 7: 168-169. Aug. 1969. *WR 137: 50*
[Univ. Toronto, Toronto, Canada.]

Walker, Alan. THE LOCOMOTION OF THE LORISES, WITH SPECIAL REFERENCE TO THE POTTO. *East African Wildl. J.* 7: 1-5, 2 figs. + 1 pl. Aug. 1969. *WR 137: 50*
[Makerere Univ. Coll. Med. School, P.O. Box 7072, Kampala, Uganda.]

Wolfe, James L. ARMADILLO DISTRIBUTION IN ALABAMA AND NORTHWEST FLORIDA. *Quart. J. Fla. Acad. Sci.* 31(3): 209-212. 1968. [From Biol. Abstr. 50(24), 1969.] *WR 137: 50*
[Miss. State Univ., State College.]

Wrangham, R. W. CAPTIVITY BEHAVIOUR AND POST-NATAL DEVELOPMENT OF THE CAPE POUCHED RAT, *SACCOSTOMUS CAMPESTRIS* PETERS. *Puku* no. 5. p. 207-210. 1969. *WR 137: 50*
[New Coll., Oxford, England.]

BIRDS--GENERAL

Alsop, Fred J. III, and Gary O. Wallace. SPRING TOWER-KILL IN KNOX COUNTY. *Migrant* 40(3): 57-58. Sept. 1969. *WR 137: 50*
[Univ. Tenn., Knoxville.] Weights and measurements of 20 birds (10 spp.) collected around the base of the tower.

Andersen-Harild, Pelle, and Erik Kramshøj. VIRKSOMHEDEN VED BLÅVAND FUGLESTATION EFTERÅRET 1965. [ACTIVITY AT BLÅVAND BIRD STATION 1965. (DENMARK).] *Dansk Ornithol. Foren. Tidsskr.* 62(3/4): 191-204. 1969. [From Biol. Abstr. 50 (24), 1969. In Danish with English summ.] *WR 137: 50*
[Gyldendalsvej 13, Kgs. Lyngby, Denmark.]

Busse, Przemyslaw, and Bogumila Olech. NIEKTORE PROBLEMY ZQIAZANE Z NOCOWANIEM PTAKOW W SKRZYNKACH LEGOWYCH. [ON PROBLEMS OF BIRDS SPENDING NIGHTS IN NESTBOXES.] *Acta Ornithol. Warszawa* 11(1): 1-26, illus. 1968. [From Biol. Abstr. 50(23), 1969. In Polish with Russian and English summ.] *WR 137: 50*
[Stacja Badw, UMK Siemionki, Wlostowo, Poland.]

BIRDS--GENERAL--Continued

Cody, Martin L. CONVERGENT CHARACTERISTICS IN SYMPATRIC SPECIES: A POSSIBLE RELATION TO INTERSPECIFIC COMPETITION AND AGGRESSION. *Condor* 71(3): 222-239, 4 figs. + 1 pl. July 1969. *WR 137: 51*

[Univ. Calif., Los Angeles.] "It is predicted that some sort of aggression will exist between convergently-similar species. Such an interaction could either wholly or partially separate species spatially, or perhaps effect some temporal sequence of resource utilization.... The same food plants are used by these birds, but with a temporal displacement, which appears to be facilitated or regulated either by similar vocalizations between species, by similar appearance, or both."--Courtesy/ Paul A. Stewart.

Holgersen, Holger. LANDSPLAN FOR FUGLERESERVATER. [NATIONAL PLAN FOR BIRD RESERVES.] *Sterna* 8(1): 27-29. 1968. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 51*

Hooper, Robert G., and Hewlette S. Crawford. WOODLAND HABITAT RESEARCH FOR NONGAME BIRDS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 201-207. 1969. *WR 137: 51*

[SE Forest Expt. Sta., Blacksburg, Va.] Two approaches to habitat research of nongame bird species are described. Current needs point to increased bird-habitat research. With quantitative data, habitats for specific birds can be duplicated in park and urban environments.--From summ.

Oatley, T. B. BIRD ECOLOGY IN THE EVERGREEN FORESTS OF NORTH WESTERN ZAMBIA. *Puku* no. 5. p. 141-180, 4 pls. 1969. *WR 137: 51*

[Cossypha Cottage, P.O. Hilton, Natal, South Africa.]

Swartz, L. G. DISTRIBUTION AND MOVEMENTS OF BIRDS IN THE BERING AND CHUKCHI SEAS. *Pacific Sci.* 21: 332-347. 1967. [From Auk 86(4), 1969.] *WR 137: 51*

Washington, D., and C. J. O. Harrison. ABNORMAL REDDISH PLUMAGE DUE TO 'COLOUR FEEDING' IN WILD GREENFINCHES. *Bird Study* 16(2): 111-114. June 1969. *WR 137: 51*

An examination of abnormally colored *Chloris chloris* indicated that neither superficial adherent coloring nor genetic mutation had caused the reddish plumage. There was no obvious natural food source that might have produced the coloration.

BIRDS--TECHNIQUES

Hjorth, Ingemar. A COMMENT ON GRAPHIC DISPLAYS OF BIRD SOUNDS AND ANALYSES WITH A NEW DEVICE, THE MELOGRAPH MONA. *J. Theoret. Biol.* 26: 1-10, 4 figs. + 1 pl. 1970. *WR 137: 51*

[Univ. Uppsala, Uppsala, Sweden.] Abstract: In ethological and ornithological papers there is a common tendency to include complex visualizations of sounds whenever a vocalization is presented. The suitability of the excess of complex graphs in publications and the indiscriminate usage of sonagrams are initially discussed. Then a new device that simultaneously registers fundamental frequencies and pressure-levels is described. It has been found that for a general description of a vocalization and for most studies in intra- and inter-individual variations, the registrations from this new device are more convenient. Also, the costs for the analyses are considerably lower than those for sonagrams.

Jovanović, Vojislav, and Leonard Atkins. A TISSUE CULTURE TECHNIQUE FOR THE STUDY OF AVIAN CHROMOSOMES. *Auk* 86(4): 696-700, 1 fig. Oct. 1969. *WR 137: 51*

[Univ. Belgrade, Belgrade, Yugoslavia.] Courtesy/ Paul A. Stewart.

Martin, Stephen G. A TECHNIQUE FOR CAPTURING NESTLING GRASSLAND BIRDS WITH MIST NETS. *Bird-Banding* 40(3): 233-237, 1 fig. July 1969. *WR 137: 51*

[Oreg. State Univ., Corvallis.] Two nets are set to form a "V" with the ground nest inside. The bander walks toward the open end of the "V" and flushes the bird into the net.--Courtesy/ Paul A. Stewart.

Rea, A. M. AGE, SEX, AND RACE DETERMINATION OF YELLOW-BELLIED SAPSUCKERS. *Western Bird Bander* 43: 46-47. 1968. [From Auk 86(4), 1969.] *WR 137: 52*

Westerfrolke, P. EIN HILFSMITTEL ZUR ANLOCKUNG UND BEOBACHTUNG VON VOGELN. [A METHOD TO ATTRACT AND OBSERVE BIRDS.] *Ornithol. Mitteil.* 20(1): 20-22, illus. 1968. [From Biol. Abstr. 50(20), 1969. In German.] *WR 137: 52*
[Wilhelm-Wolfgang-Strasse 13, Gutersloh, Germany.]

BIRDS--MORPHOLOGY & PHYSIOLOGY

Clark, George A., Jr. ORAL FLANGES OF JUVENILE BIRDS. *Wilson Bull.* 81(3): 270-279, 1 fig. Sept. 1969. *WR 137: 52*
[Univ. Conn., Storrs.] The degree of development of oral flanges appears to be associated with nesting sites, hole-nesting birds having larger flanges than open nesters.--Courtesy/ Paul A. Stewart.

Donham, Richard S., and Fred E. Wilson. PINEALECTOMY IN HARRIS' SPARROW. *Auk* 86(3): 553-555. July 1969. *WR 137: 52*
[Mount St. Scholastica Coll., Atchison, Kans.] Pinealectomy did not affect ovarian or testicular weight.--Courtesy/ Paul A. Stewart.

Grant, P. R. BILL SIZE, BODY SIZE, AND THE ECOLOGICAL ADAPTATIONS OF BIRD SPECIES TO COMPETITIVE SITUATIONS ON ISLANDS. *Syst. Zool.* 17: 319-333. 1968. [From Auk 86(3), 1969.] *WR 137: 52*

Helms, Carl W., and Robert B. Smythe. VARIATION IN MAJOR BODY COMPONENTS OF THE TREE SPARROW *(SPIZELLA ARBOREA)* SAMPLED WITHIN THE WINTER RANGE. *Wilson Bull.* 81(3): 280-292. Sept. 1969. *WR 137: 52*
[Univ. Ga., Athens.] Males were larger than females but alike in fat component. Birds were fatter in the winter than in the fall, but there was no premigratory fattening.--Courtesy/ Paul A. Stewart.

Lasiewski, Robert C., and William R. Dawson. CALCULATION AND MISCALCULATION OF THE EQUATIONS RELATING AVIAN STANDARD METABOLISM TO BODY WEIGHT. *Condor* 71 (3): 335-336, 2 figs. July 1969. *WR 137: 52*
[Univ. Calif., Los Angeles.] Courtesy/ Paul A. Stewart.

Laskey, Amelia R. BILATERAL GYNANDRISM IN A CARDINAL AND A RUFOUS-SIDED TOWHEE. *Auk* 86(4): 760. Oct. 1969. *WR 137: 52*
[1521 Graybar Lane, Nashville, Tenn.] One case of gynandrism each among banded cardinals *(Richmondena cardinalis)* and rufous-sided towhees *(Pipilo erythrophthalmus).*--Courtesy/ Paul A. Stewart.

Payne, Robert B. UNPNEUMATIZED SKULL CONDITION IN ADULT SCALY-FRONTED WEAVERS, *SPOROPIPES FRONTALIS. Auk* 86(3): 570. July 1969. *WR 137: 52*
[Univ. Okla., Norman.] Courtesy/ Paul A. Stewart.

Poulson, Thomas L. SALT AND WATER BALANCE IN SEASIDE AND SHARP-TAILED SPARROWS. *Auk* 86(3): 473-489, 3 figs. July 1969. *WR 137: 52*
[Yale Univ., New Haven, Conn.] The following are discussed: ad libitum drinking, activity, weight maintenance, osmotic and ionic regulation, salinity discrimination, minimum water needs for weight maintenance, activity during restriction of water, regulation of salt ingestion, drinking of distilled water and dilute salt solutions, drinking of salt solutions in relation to weight maintenance, and capacity to concentrate urine.--Courtesy/ Paul A. Stewart.

Ramsey, Jed J. THERMOREGULATION IN BIRDS. *Bull. Texas Ornithol. Soc.* 3(2): 14-17. Apr.-June 1969. *WR 137: 52*
[Lamar State Coll. Technol., Beaumont, Texas.] A summary of the physical and chemical mechanisms which control heat loss in birds.

Ryan, L. S. SEXING PURPLE FINCHES. *Inland Bird Banding News* 41(4): 123-125. July-Aug. 1969. *WR 137: 53*
[307 Riverwood, Little Falls, Minn.] Wing chord length is not a reliable method of sexing brown plumage purple finches.--Courtesy/ Paul A. Stewart.

Snow, D. W. THE MOULT OF BRITISH THRUSHES AND CHATS. *Bird Study* 16(2): 115-129, 8 figs. June 1969. *WR 137: 53*
[British Mus. Nat. Hist., London, S.W. 7, England.] Estimates are given for the duration, and average date of onset, of the moult in the song thrush, robin, stonechat, redstart, and wheatear, and provisional estimates for the mistle thrush, nightingale, whinchat, and black redstart.

Stresemann, E., and V. Stresemann. DIE MAUSER VON *ANTHUS CAMPESTRIS* UND *ANTHUS RICHARDI*. [THE MOLT OF TAWNY PIPIT AND RICHARD'S PIPIT.] *J. Ornithol.* 109: 17-21. 1968. [From Auk 86(4), 1969. In German.] *WR 137: 53*

Thielcke, G. GEMEINSAMES DER GATTUNG *PARUS*. EIN BIOAKUSTISCHER BEITRAG ZUR SYSTEMATIK. [COMMON CHARACTERISTICS IN THE GENUS *PARUS*. A BIO-ACOUSTIC CONTRIBUTION TO SYSTEMATICS.] *Vogelwelt* suppl. 1: 147-164. 1968. [From Auk 86(3), 1969. In German.] *WR 137: 53*
Summarization of morphological and behavioral characteristics of the genus *Parus*.

Wiseman, Arthur J. THE GEOGRAPHICALLY ERRATIC CHICKADEES. *Inland Bird Banding News* 41(5): 164-168. Sept.-Oct. 1969. *WR 137: 53*
[2073 Harrison Ave., Cincinnati, Ohio.] Wing and tail measurements of individual birds will vary with feather wear, humidity, human error, and muscle tension in the bird.--Courtesy/ Paul A. Stewart.

BIRDS--BEHAVIOR

Barth, Edvard K. OM FUGLERS REAKSJON PA ARTSFRENDERS OG ANDRE ARTERS VARSELSKRID, OG HVORDAN DETTE HAR OG KAN FA PRAKTISK ANVENDELSE. [ON THE REACTION OF BIRDS TO ALARM CALLS FROM THEIR OWN AND OTHER SPECIES AND HOW THIS CAN BE USED FOR PRACTICAL PURPOSES.] *Fauna* 21(3): 145-147, illus. 1968. [From Biol. Abstr. 50(21), 1969. In Norwegian with English summ.] *WR 137: 53*
[Zool. Mus., Oslo, Norway.]

Bell, B. D. SOME THOUGHTS ON THE APPARENT ECOLOGICAL EXPANSION OF THE REED BUNTING. *British Birds* 62(6): 209-218. June 1969. *WR 137: 53*
[33 Sneyd Ave., Newcastle, Staffordshire, England.] Changes in habitat brought about by agriculture and urbanization here probably initiated the expansion of *Emberiza schoeniclus* into drier habitats.

Brackbill, Hervey. REVERSE MOUNTING BY THE RED-HEADED WOODPECKER. *Bird-Banding* 40(3): 255-256. July 1969. *WR 137: 53*
[2620 Poplar Dr., Baltimore, Md.] The color-banded female sprang onto her mate's back and off again, and was in turn mounted for perhaps a second's time.--Courtesy/ Paul A. Stewart.

Collias, Nicholas E., and Elsie C. Collias. SIZE OF BREEDING COLONY RELATED TO ATTRACTION OF MATES IN A TROPICAL PASSERINE BIRD. *Ecology* 50(3): 481-488, 6 figs. Late Spring 1969. *WR 137: 53*
[Univ. Calif., Los Angeles.] Success of males of village weaverbirds *(Ploceus cucullatus)* in attracting females was related to the number of males in the colony.--Courtesy/ Paul A. Stewart.

Gnielka, Reinhard. ZUR PHÄNOLOGIE DES HERBSTGESANGES UND DER HERBSTBALZ. [ON THE PHENOLOGY OF AUTUMNAL SINGING AND PAIRING.] *Ornithol. Mitteil.* 21(9): 179-188, 6 figs. Sept. 1969. In German. *WR 137: 53*
[Halle/Saale, Germany.]

Gwinner, E. CIRCANNUALE PERIODIK DES JAHRESZEITLICHEN FUNKTIONSWANDELS BEI ZUGVÖGELN. UNTERSUCHUNGEN AM FITIS *(PHYLLOSCOPUS TROCHILUS)* UND AM WALDLAUBSÄNGER *(P. SIBILATRIX)*. [NEARLY-ANNUAL PERIODICITY OF SEASONAL BEHAVIOR AMONG MIGRANT BIRDS. INVESTIGATIONS OF WILLOW WARBLERS AND WOOD WARBLERS.] *J. Ornithol.* 109: 70-95. 1968. [From Auk 86(4), 1969. In German with English summ.] *WR 137: 54*

Horn, Charles L., Jr. UNUSUAL BLUEBIRD NESTING SITE. *Loon* 41(3): 91-92. Sept. 1969. *WR 137: 54*
[5100 Juanita Ave., Minneapolis, Minn.] Possible in a cliff swallow's nest.

Janzen, Daniel H. BIRDS AND THE ANT X ACACIA INTERACTION IN CENTRAL AMERICA, WITH NOTES ON BIRDS AND OTHER MYRMECOPHYTES. *Condor* 71(3): 240-256, 8 figs. July 1969. *WR 137: 54*
[Univ. Chicago, Chicago, Ill.] There is no indication that nesting by birds in the acacia is in any manner beneficial to the ants, although it probably is of value to the bird, clearly a mildly persecuted myrmecophile. Adaptations of the bird to the acacia and its ants are not clear but probably involve discrimination between the acacia and other plants, tolerance of an occasional sting, and persistence in the face of being occasionally driven out of a heavily occupied tree.--From concl. Courtesy/ Paul A. Stewart.

Kennedy, R. J. SUNBATHING BEHAVIOUR OF BIRDS. *British Birds* 62(7): 249-258. July 1969. *WR 137: 54*
[University, Newcastle upon Tyne, England.] Various suggested functions of sunbathing are discussed, but the significance of the behavior is as yet obscure though widespread. More than 170 spp. of 48 families and subfamilies have been recorded sunbathing.

Leck, Charles F. OBSERVATIONS OF BIRDS EXPLOITING A CENTRAL AMERICAN FRUIT TREE. *Wilson Bull.* 81(3): 264-268. Sept. 1969. *WR 137: 54*
[Cornell Univ., Ithaca, N.Y.] A fruit tree of the family Meliaceae was visited by 16 spp. of birds, mostly before 9:30 a.m. Some interactions of feeding birds were noted.--Courtesy/ Paul A. Stewart.

Lorenz, K., and U. v. St. Paul. DIE ENTWICKLUNG DES SPIESSENS UND KLEMMENS BEI DEN DREI WÜRGERARTEN *LANIUS COLLURIO, L. SENATOR* UND *L. EXCUBITOR*. [THE DEVELOPMENT OF IMPALING AND WEDGING BEHAVIOR IN THREE SPECIES OF SHRIKES *(LANIUS COLLURIO, L. SENATOR,* AND *L. EXCUBITOR).*] *J. Ornithol.* 109: 137-156. 1968. [From Auk 86(3), 1969. In German.] *WR 137: 54*

Mathiak, Harold A. UNUSUAL NESTING HABITAT. *Passenger Pigeon* 31(3): 282-283, [2 figs.]. Fall 1969. *WR 137: 54*
[Horicon, Wis.] Several Brewer's blackbirds and a killdeer nested in a bark dump covering an ash fill.

Meanley, Brooke. PRE-NESTING AND NESTING BEHAVIOR OF THE SWAINSON'S WARBLER. *Wilson Bull.* 81(3): 246-257, 1 fig. Sept. 1969. *WR 137: 54*
[Patuxent Wildl. Res. Center, Laurel, Md.] The following items are discussed as they relate to the Swainson's warbler *(Linnothlypis swainsonii)*: arrival on breeding grounds, pairing, territory, pre-nesting activity, nest building, egg laying, clutch size, incubation period, cowbird parasitism, behavior during incubation, and care of young.--Courtesy/ Paul A. Stewart.

Ovchinnikova, N. P. [ON THE USE OF ESTABLISHED VOCAL AND GENERAL MOTOR REACTIONS BY BIRDS.] *Vestnik Leningradskogo Univ.* 1968(15): 154-156. 1968. [From Bird-Banding 40(3), 1969. In Russian with English summ.] *WR 137: 54*

Patterson, Stephen. NESTING BOX UTILIZATION BY THE EASTERN BLUEBIRD AND THE HOUSE WREN----1968. *Iowa Bird Life* 39(3): 55-58. Sept. 1969. *WR 137: 54*
[Rt. 2, Perry, Iowa.] Eighty boxes were placed in three types of study areas (farmed, timbered, and mixture of both). Only bluebirds nested in farmed areas, while bluebirds, wrens, and chickadees utilized the nest boxes in the other two areas.

Ricklefs, R. E. ON THE LIMITATION OF BROOD SIZE IN PASSERINE BIRDS BY THE ABILITY OF ADULTS TO NOURISH THEIR YOUNG. *Proc. Natl. Acad. Sci.* 61: 847-851. 1968. [From Auk 86(3), 1969.] *WR 137: 55*

Salfeld, Denise. JAYS RECOVERING BURIED FOOD FROM UNDER SNOW. *British Birds* 62(6): 238. June 1969. *WR 137: 55*
[Fleet House, Admiral's Walk, Hampstead, London, England.]

Shooter, Philip. UNDOMED NESTS OF DIPPER. *British Birds* 62(6): 240. June 1969. *WR 137: 55*
[153 Lower Market Street, Clay Cross, Chesterfield, Derbyshire, England.]

Sopyev, O. [ON NESTLING FEEDING ACTIVITY IN THE DESERT SITUATION.] *Ornitologiya* 9: 142-145. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 55*

Sulkava, Seppo. ON SMALL BIRDS SPENDING THE NIGHT IN THE SNOW. *Aquilo, Ser. Zool.* 7: 33-37, 3 figs. 1969. *WR 137: 55*
[Univ. Oulu, Oulu, Finland.]

Virkkunen, Ilkka. ERÄIDEN LINTUJEN SUHTAUTUMISESTA KETTUUN. [ON THE REACTIONS OF CERTAIN BIRDS TOWARDS A RED FOX.] *Ornis Fenn.* 46(3): 140-141. 1969. In Finnish with English summ. *WR 137: 55*

BIRDS--MIGRATION & BANDING REPORTS

Blondel, Jacques. SEDENTARITÉ ET MIGRATION DES OISEAUX DANS UNE GARRIGUE MEDITERRANÉENNE. [SEDENTARINESS AND MIGRATION OF BIRDS IN A MEDITERRANEAN AREA.] *Terre & Vie* 116(3): 269-314, 10 figs. July-Sept. 1969. In French with English summ. *WR 137: 55*
[Station Biol. de la Tour-du-Valat, Le Sambuc Bouches-du-Rhône, France.]

Christensen, N. Hesselbjerg, and J. Ramse Jacobsen. HEADWIND MIGRATION. *Dansk Ornithol. Foren. Tidsskr.* 62(3/4): 153-159, illus. 1969. [From Biol. Abstr. 50(23), 1969. In English with Danish summ.] *WR 137: 55*
[Odensevej 18, Himmelev pr. Roskilde, Denmark.]

Clench, Mary Heimerdinger. ADDITIONAL OBSERVATIONS ON THE FALL MIGRATION OF ADULT AND IMMATURE LEAST FLYCATCHERS. *Bird-Banding* 40(3): 238-243, 1 fig. July 1969. *WR 137: 55*
[Carnegie Museum, Pittsburgh, Pa.] Immature least flycatchers *(Empidonax minimus)* migrated through the study area in Pennsylvania, from mid-August to mid-September; whereas, most adults migrated during late August to mid-September. --Courtesy/ Paul A. Stewart.

Curtis, Steven G. SPRING MIGRATION AND WEATHER AT MADISON, WISCONSIN. *Wilson Bull.* 81(3): 235-245, 5 figs. Sept. 1969. *WR 137: 55*
[Univ. Minn., Minneapolis.] Decreases in numbers of migrants were positively correlated with clear skies and calm or southerly winds. Temperature changes were not correlated, and rain was unfavorable for initiation of migratory flights. Migration was related to movement of pressure systems.--Courtesy/ Paul A. Stewart.

deVries, R. FORTRAN-PROGRAMM ZUM BERECHNEN VON ENTFERNUNG UND KURSWINKEL FÜR NAH- UND FERNFUNDE BERINGTER VÖGEL. [FORTRAN-PROGRAM FOR DETERMINING DISTANCE AND DIRECTION BETWEEN BANDING AND RECOVERY SITES OF BANDED BIRDS.] *Vogelwarte* 24: 110-115. 1967. [From Auk 86(4), 1969. In German.] *WR 137: 55*

Dillaway, Ron C. BIRD NAVIGATION. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 62-70. 1969. *WR 137: 55*
[Wm. H. Taft High School, Woodland Hills, Calif.] A review of the methods by which birds orientate themselves and navigate to a desired destination.--From abstr.

Drewien, Rod C., and Larry F. Fredrickson. BAND RECOVERY DISTRIBUTION OF DOUBLE-CRESTED CORMORANTS FROM SOUTH WAUBAY LAKE. *S. Dak. Bird Notes* 21(2): 28-32, 1 fig. June 1969. *WR 137: 56*
[S. Dak. Dept. Game, Fish & Parks, Aberdeen.] Most cormorants from the colony migrate south through the Great Plains to wintering grounds on the Texas Gulf Coast. Nearly 1,000 young birds were banded. The 43 recoveries indicate a definite change in migration routes from 40 years ago.

Erickson, John E. BANDING STUDIES OF WINTERING BALTIMORE ORIOLES IN NORTH CAROLINA, 1963-1966. *Bird-Banding* 40(3): 181-198. July 1969. *WR 137: 56*
[Univ. Wash., Seattle.] Of 394 Baltimore orioles *(Icterus galbula)* banded during the winter in North Carolina, 99, or 25.1%, returned in a subsequent winter. The sex ratio of returning birds was one-to-one. Baltimore orioles moved shorter distances during colder weather than during warmer weather.--From summ. Courtesy/ Paul A. Stewart.

Evans, P. R. ECOLOGICAL ASPECTS OF MIGRATION, AND PRE-MIGRATORY FAT DEPOSITION IN THE LESSER REDPOLL, *CARDUELIS FLAMMEA* CABARET. *Condor* 71(3): 316-330, 8 figs. July 1969. *WR 137: 56*
[Univ. Durham, Durham, England.] The following items are discussed: migration pattern, advantages of migration, timing of migration, distance traveled in relation to food supplies, irruptive movements, premigratory fat deposition, body composition, diurnal pattern of fat deposition, variation in lean dry weight, variation in body weight, and the overlap of major events in the annual cycle.--Courtesy/ Paul A. Stewart.

Fredriksson, Stig. FÅGELSTRACKET VID ÅLANDA SJÖN ÅREN 1962-1967. [THE MIGRATION AT ALANDA LAKE 1962-1967.] *Vår Fågelvärld* 27(4): 309-326. 1968. [From Bird-Banding 40(3), 1969. In Swedish with English summ.] *WR 137: 56*

Hall, George A. BREEDING RANGE EXPANSION OF THE BROWN CREEPER IN THE MIDDLE ATLANTIC STATES. *Redstart* 36(4): 98-103, 2 figs. Oct. 1969. *WR 137: 56*
[W. Va. Univ., Morgantown.] Compilation of nesting records prior to 1960 and those reported since 1960 indicate a sizable expansion of breeding range for *Certhia familiaris*.

Hemmingsen, Axel M., and J. A. Guidal. OBSERVATIONS ON BIRDS IN NORTHEASTERN CHINA, ESPECIALLY THE MIGRATION AT PEI-TAI-HO BEACH. II. SPECIAL PART. *Spolia Zool. Mus. Hauniensis Kobenhavn* 28: 1-326, illus. 1968. [From Biol. Abstr. 50 (17), 1969.] *WR 137: 56*

Holgersen, Holger. RINGMERKINGSOVERSIKT 1966. [BIRD BANDING IN NORWAY 1966.] *Sterna* 8(1): 21-26. 1968. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 56*

Lack, D. BIRD MIGRATION AND NATURAL SELECTION. *Oikos* 19: 1-9. 1968. [From Auk 86(4), 1969.] *WR 137: 56*

Larsen, Jørgen, and Torben Simonsen. ODENSE RINGMAERKESTATION 1964-67. [BIRDRINGING BY ODENSE RINGMAERKESTATION DENMARK 1964-67.] *Dansk Ornithol. Foren. Tidsskr.* 62(3/4): 166-172. 1969. [From Biol. Abstr. 50(23), 1969. In Danish with English summ.] *WR 137: 56*
[Solsiden 5, Naesby, Denmark.]

Michaelsen, Jan. OBSERVASJONER AV SENT TREKK I VESTFOLD 1963-1966. [OBSERVATIONS OF LATE MIGRATION IN VESTFOLD 1963-1966.] *Sterna* 8(1): 30-32, illus. 1968. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 56*

Moreau, R. E. THE RECURRENCE IN WINTER QUARTERS (ORTSTREUE) OF TRANS-SAHARAN MIGRANTS. *Bird Study* 16(2): 108-110. June 1969. *WR 137: 56*
[Curlews, Sutton St. Nicholas, Hereford, England.] Summary of recorded instances of migrants recurring in winter quarters south of the Sahara.

BIRDS--MIGRATION & BANDING REPORTS--Continued

Nisbet, I. C. T., and William H. Drury, Jr. A MIGRATION WAVE OBSERVED BY MOON-WATCHING AND AT BANDING STATIONS. *Bird-Banding* 40(3): 243-252. July 1969. *WR 137: 57*
[Mass. Audubon Soc., Lincoln.] Migration in a SSE direction occurred the first evening after the passage of a cold front; migration to the SW occurred two to three days after the passage of a cold front.--Courtesy/ Paul A. Stewart.

Nisbet, I. C. T., and W. H. Drury. NOCTURNAL MIGRANTS CHANGING DIRECTION IN FLIGHT. *Bird-Banding* 40(3): 252-254, 1 fig. July 1969. *WR 137: 57*
[Mass. Audubon Soc., Lincoln.] Of the 233 birds, seven or eight flew in widely curving tracks across the moon's face and three changed direction twice.--Courtesy/ Paul A. Stewart.

Parnell, James F. HABITAT RELATIONS OF THE PARULIDAE DURING SPRING MIGRATION. *Auk* 86(3): 505-521, 1 fig. July 1969. *WR 137: 57*
[Wilmington Coll., Wilmington, N.C.] Those species that nest in northern coniferous forests were less selective of habitat when migrating through North Carolina than other species.--Courtesy/ Paul A. Stewart.

Rabol, Jørgen. HEADWIND-MIGRATION. ANSWER. *Dansk Ornithol. Foren. Tidsskr.* 62(3/4): 160-165, illus. 1969. [From Biol. Abstr. 50(23), 1969. In English with Danish summ.] *WR 137: 57*
[Zool. Lab., Universitetspasken 15, Copenhagen, Denmark.]

Rendahl, H. ZUR FRAGE DER ZUGWEGE SKANDINAVISCHER BLAUKEHLCHEN. *LUSCINIA S. SVECICA* (L.). [ON THE QUESTION OF MIGRATION OF SCANDINAVIAN BLUETHROATS.] *Vogelwarte* 24: 123-135. 1967. [From Auk 86(4), 1969. In German.] *WR 137: 57*

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Alden, Peter. FINDING THE BIRDS IN WESTERN MEXICO, A GUIDE TO THE STATES OF SONORA, SINALOA, AND NAYARIT. *Univ. Ariz. Press* (Tucson). 138 p., illus. 1969. Paper, $5.95. [From Biol. Abstr. 50(24), 1969.] *WR 137: 57*

Cline, David R., Donald B. Siniff, and Albert W. Erickson. SUMMER BIRDS OF THE PACK ICE IN THE WEDDELL SEA, ANTARCTICA. *Auk* 86(4): 701-716, 5 figs. Oct. 1969. *WR 137: 57*
[Univ. Minn., Minneapolis.] With observation on 11 species.--Courtesy/ Paul A. Stewart.

Dean, W. R. A CHECK LIST OF THE BIRDS OF BENONI. *South African Avifauna Ser., Percy Fitzpatrick Inst. African Ornithol.* no. 64. 17 p. 1969. Price 20¢. *WR 137: 57*

De Lucca, C. A REVISED CHECK-LIST OF THE BIRDS OF THE MALTESE ISLANDS. *E. W. Classey, Ltd.* (353 Hanworth Rd., Hampton, Middlesex, England). 99 p. 1969. [From Auk 86(4), 1969.] *WR 137: 57*
Annotated checklist of 366 spp. and sspp.

Forest, G. W. SOME BIRD NOTES FROM LAKE ST. LUCIA. *Lammergeyer* no. 10. p. 89-91. June 1969. *WR 137: 57*
Notes on the effects of increasing salinity on the bird population and of the failure of the 1968 white pelican breeding season.

Gilliard, E. T., and M. LeCroy. BIRDS OF THE SCHRADER MOUNTAIN REGION, NEW GUINEA. RESULTS OF THE AMERICAN MUSEUM OF NATURAL HISTORY EXPEDITION TO NEW GUINEA IN 1964. *Am. Mus. Novitates* no. 2343. 41 p. 1968. [From Auk 86 (3), 1969.] *WR 137: 57*

Irwin, Michael P. Stuart, P. N. F. Niven, and J. M. Winterbottom. SOME BIRDS OF THE LOWER CHOBE RIVER AREA, BOTSWANA. *Arnoldia* 4(21): 1-40, illus. 14 Sept. 1969. *WR 137: 58*
[Natl. Mus. Rhodesia, Bulawayo.] A list of species annotated to habitat.

Langvatn, Rolf, and Arne Moksnes. TREKK FRA FUGLEFAUNAEN I TROLLHEIMEN. [SURVEY OF THE BIRD FAUNA IN TROLLHEIMEN (NORWAY, CHECKLIST).] *Fauna* 22(1): 56-61, illus. 1969. [From Biol. Abstr. 50(24), 1969. In Norwegian with English summ.] *WR 137: 58*
[Zool. Inst., Norges Laererhogsk., Trondheim, Norway.]

Mambetzhumaev, A. M. [ON REPRODUCTION AND FOOD OF SOME BIRDS OF THE TUGAI (BOTTOMLAND) LANDSCAPE OF MID AND LOWER AMU-DARIA.] *Vestnik Karakal. Affiliate, Akad. Nauk, Uzbek SSR* 1968(1): 11-20. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 58*

Mendez, E. UNA BREVE INTRODUCCION A LAS AVES DE PANAMA. [A BRIEF INTRODUCTION TO BIRDS OF PANAMA.] iii + 57 p., illus. Printed by the author. 1969. [From Biol. Abstr. 50(21), 1969. In Spanish.] *WR 137: 58*
[Univ. Panamá, Panama City, Panama.]

Michels, Heinz. ORNITHOLOGISCHE BEOBACHTUNGEN AN DER COSTA DEL SOL (SPANIEN). [ORNITHOLOGICAL OBSERVATIONS IN THE COSTA DEL SOL (SPAIN).] *Ornithol. Mitteil.* 21(5): 106-108. May 1969. In German. *WR 137: 58*
[Morperstrasse 60/24, Düsseldorf, Germany.] Annotated list.

Monroe, Burt L., Jr. SUMMARY OF OCCURRENCE OF BIRDS OF KENTUCKY. *Ky. Warbler* 45(3): 47-56. Aug. 1969. *WR 137: 58*
[Univ. Louisville, Louisville, Ky.] Occurrences of 275 spp. of birds have been summarized on bar graph charts. Records up through December 31, 1968, are included.

Nitecki, C. [BIRDS OF THE CHODECZ TERRITORY, DISTRICT WLOCLAWEK.] *Acta Ornithol.* 10: 268-279. 1967. [From Auk 86(3), 1969. In Polish with English summ.] *WR 137: 58*
Notes on 181 spp.

Ouellet, Henri. LES OISEAUX DE L'ÎLE ANTICOSTI, PROVINCE DE QUÉBEC, CANADA. [THE BIRDS OF ANTICOSTI ISLAND, QUEBEC PROVINCE, CANADA.] *Natl. Mus. Nat. Sci., Publ. Zool.* no. 1. x + 79 p., 3 figs. 1969. Price $1.75. In French with English summ. *WR 137: 58*
The bird fauna of Anticosti Island more closely resembles that of the Gaspé Peninsula than that of the other adjacent areas.--From summ.

Schonhardt, Hans. ZUR VOGELWELT DES SCHWARZWALDES. 2. TEIL. [ON THE AVIFAUNA OF THE BLACK FOREST. PART 2.] *Ornithol. Mitteil.* 21(7): 135-137. July 1969. In German. *WR 137: 58*
Tetraonidae through Bombycillidae.

Sick, H., and L. F. Pabst. [THE BIRDS OF RIO DE JANEIRO (GUANABARA), SYSTEMATIC, ANNOTATED LIST.] *Arq. Mus. Nacl.* 53: 99-160. 1967. [From Auk 86(3), 1969. In Portuguese with English summ.] *WR 137: 58*
Listing of 366 spp.

Simeonov, S., and Jord Sofroniev. [ORNITHOLOGICAL AND ZOONOLOGICAL INVESTIGATIONS OF SOME SWAMPS OF THE PLAINS OF SOFIA.] *God. Sofiiskiya Univ. Biol. Fak. Kn. I. Zool. Biokhim. Zhivotn.* 61: 1-26, illus. 1966/1967. [From Biol. Abstr. 50(24), 1969. In Bulgarian with German summ.] *WR 137: 58*

Skead, David M. A PRELIMINARY LIST OF THE BIRDS OF THE SCHWEIZER RENEKE DISTRICT, TRANSVAAL. *South African Avifauna Ser., Percy Fitzpatrick Inst. African Ornithol.* no. 65. 18 p. 1969. Price 30¢. *WR 137: 58*
Annotated list of 153 spp.

Strokov, V. V. [AVIAN ABUNDANCE IN NORTHERN FOREST-STEPPE SHELTERBELTS.] *Ornitologiya* 9: 77-87. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 59*

Thompson, Max C., and Robert L. DeLong. BIRDS NEW TO NORTH AMERICA AND THE PRIBILOF ISLANDS, ALASKA. *Auk* 86(4): 747-749. Oct. 1969. *WR 137: 59*
[Southwestern Coll., Winfield, Kans.] Reports observation on 15 spp. of which four are new for North America: *Numenius madagascariensis, Actitis hypoleucos, Erolia temminckii,* and *Alauda arvensis pekinensis.*--Courtesy/ Paul A. Stewart.

Trautman, Milton B., and Mary A. Trautman. ANNOTATED LIST OF THE BIRDS OF OHIO. *Ohio J. Sci.* 68(5): 257-323, illus. 1968. [From Biol. Abstr. 50(18), 1969.] *WR 137: 59*
[Ohio Acad. Sci., Columbus.]

Voelker, Theodore. SURVEY OF NESTING BIRDS IN ST. YON VALLEY / ST. MARY'S COLLEGE, WINONA, MINNESOTA. *Loon* 41(3): 87-89. Sept. 1969. *WR 137: 59*
[St. Mary's Coll., Winona, Minn.] List of netted and banded birds from abandoned farm habitat.

Wakelin, H. SOME NOTES ON THE BIRDS OF NORFOLK ISLAND. *Notornis* 15: 156-176. 1968. [From Auk 86(4), 1969.] *WR 137: 59*

Wasilewski, Jacek. PTAKI WODNO-BLOTNE STAWOW ZATORSKICH. [WATER- AND SWAMP-BIRDS OF ZATOR FISHPONDS (POLAND).] *Przegl. Zool.* 10(1): 51-60, illus. 1966. [From Biol. Abstr. 50(18), 1969. In Polish with English summ.] *WR 137: 5*

Wauer, Roland H. RECENT BIRD RECORDS FROM THE VIRGIN RIVER VALLEY OF UTAH, ARIZONA, AND NEVADA. *Condor* 71(3): 331-335. July 1969. *WR 137: 59*
[Box 67, Big Bend National Park, Texas.] With notes on occurrence of 46 spp.--Courtesy/ Paul A. Stewart.

BIRDS--POPULATIONS & FLUCTUATIONS

Bournard, Michel, and Daniel Ariagno. RELEVES QUANTITATIFS DE PASSEREAUX DANS LA RESERVE DE VILLARS-LES-DOMBES (AIN). [QUANTITATIVE SUMMARY OF PASSERINES IN THE VILLARS-LES-DOMBES RESERVE (AIN).] *Terre & Vie* 116(3): 315-359, 22 figs. 1969. In French. *WR 137: 59*
[Laboratoire d'Ecologie & Biologie Animale Faculté des Sciences, 16 quai Claude Bernard, Lyon, France.]

Brown, Jerram L. TERRITORIAL BEHAVIOR AND POPULATION REGULATION IN BIRDS / A REVIEW AND RE-EVALUATION. *Wilson Bull.* 81(3): 293-329. Sept. 1969. *WR 137: 59*
[Univ. Rochester, Rochester, N.Y.] Although the hypothesis of population regulation through territorial behavior is a tempting one, too few critical studies on it have been done to conclude now that it is of widespread importance in limiting reproduction of avian populations.--From summ. Courtesy/ Paul A. Stewart.

Cook, Robert Edward. VARIATION IN SPECIES DENSITY OF NORTH AMERICAN BIRDS. *Syst. Zool.* 18(1): 63-84, illus. 1969. [From Biol. Abstr. 50(18), 1969.] *WR 137: 59*
[Yale Univ., New Haven, Conn.]

Greve, K. ZUR SIEDLUNGSDICHTE EINIGER BRUTVOGEL AUF DER NORDSEEINSEL NEUWERK. [ON THE DENSITY OF COLONIES OF SOME BREEDING BIRDS IN THE NORTH SEA ISLAND OF NEUWERK.] *Ornithol. Mitteil.* 21(8): 169. Aug. 1969. In German. *WR 137: 59*
[Siegfriedstrasse 27, Braunschweig, Germany.]

Helle, Timo, and Heimo Mikkola. HÖMÖTIAISEN *(PARUS MONTANUS)* VAELLUKSISTA KESKI-SUOMESSA 1965-68. [ON INVASIONS OF THE WILLOW TIT *(PARUS MONTANUS)* IN 1965-1968 IN CENTRAL FINLAND.] *Ornis Fenn.* 46(3): 136-139. 1969. In Finnish with English summ. *WR 137: 60*

Mayfield, Harold F. PURPLE MARTIN POPULATION CHANGES OVER FIFTEEN YEARS. *Auk* 86(3): 522-528, 1 fig. July 1969. *WR 137: 60*
[R.F.D., Waterville, Ohio.] The high population level was 2.5 times that at the lowest level. The greatest decline in one year was 41% of the previous year's population, and this decline was immediately followed by the greatest gain, 82% of the previous year's population. The population minima occurred at three-year intervals, with decline or recovery taking one or two years.--From summ. Courtesy/ Paul A. Stewart.

Preuss, Niels Otto. INVASION AF SILKEHALER *(BOMBYCILLA GARRULUS)* I DANMARK 1965-66. [INFLUX OF WAXWINGS *(BOMBYCILLA GARRULUS)* IN DENMARK 1965-66.] *Dansk Ornithol. Forenings Tidsskr.* 62(2): 105-125, illus. 1968. [From Biol. Abstr. 50(20), 1969. In Danish with English summ.] *WR 137: 60*
[Univ. Copenhagen, Copenhagen, Denmark.]

Robbins, Chandler S., and Willet T. Van Velzen. THE BREEDING BIRD SURVEY 1967 AND 1968. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 124. iv + 107 p., 36 figs. Apr. 1969. For sale by Supt. Documents at $1.00. *WR 137: 60*
[Migratory Bird Populations Sta., Laurel, Md.] Abstract: In the Breeding Bird Survey of North America, cooperators ran 982 survey routes in 1967 and 1,174 in 1968. All States except Hawaii and all Canadian Provinces except Newfoundland were included. Roadside routes are selected at random within 1-degree blocks of latitude and longitude. Each 24.5-mile route, with 3-minute stops spaced half a mile apart, is driven by automobile. All birds heard or seen at the stops are recorded on special forms, and the data are transferred to magnetic tape for analysis. The average number of birds of each species per route is tabulated by State and Province, presenting for the first time a record of the comparative abundance of each species across the continent. The sample size is given for each species recorded. A sophisticated analysis program, here employed for the first time, is used to compute weighted mean values of the survey results for selected species at the State, stratum, regional, and continental level. The statistical significance of year-to-year changes at the 80, 90, 95, and 99 percent levels of probability are part of the computer output. An index for comparing populations of each species from year to year is established, with 1968 as the base year. Maps show the breeding range and comparative abundance of selected species.

Sladen, William J. L., Robert E. LeResche, and Robert C. Wood. ANTARCTIC AVIAN POPULATION STUDIES 1967-1968 (PENGUINS, SKUA, BANDING). *Antarctic J. U.S.* 3(6): 247-249, illus. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 60*
[Johns Hopkins Univ., Baltimore, Md.]

Yeatman, L. J. SEASONAL FLUCTUATIONS OF A BIRD POPULATION ON THE COAST OF VAR, FRANCE. *Bird Study* 16(2): 75-82, 3 figs. June 1969. *WR 137: 60*
[11 Quai Voltaire, Paris 7e, France.] Seasonal populations were studied from 1962 to 1967 during banding activities on the southern coast of France. Banded birds were classed as sedentary species, winter visitors, passage migrants, or summer visitors.

BIRDS--ECONOMICS, CONTROL, MORTALITY

Blake, Charles H., and Joseph M. Cadbury. AN OLD WARBLER. *Bird-Banding* 40 (3): 255. July 1969. *WR 137: 60*
[Box 613, Hillsborough, N.C.] A banded black-and-white warbler *(Mniotilta varia)* was 11 years old when found dead.--Courtesy/ Paul A. Stewart.

Bodle, John E. MORTALITY OF COMMON MURRES ALONG THE NORTHERN CALIFORNIA COAST. *Calif. Fish & Game* 55(4): 329-330. Oct. 1969. *WR 137: 61*
[Univ. Calif., Davis.] Observations of 711 *Uria aalge californica* mortalities, during July-Sept. 1968. Six murres examined contained "above normal concentration of DDE in the brain tissue." Tests for chlorinated hydrocarbons are continuing both on specimens found dead and specimens collected in November by shooting.

Cameron, R. A. D. PREDATION BY SONG THRUSHES *TURDUS ERICETORUM* (TURTON) ON THE SNAILS *CEPAEA HORTENSIS* (MULL.) AND *ARIANTA ARBUSTORUM* (L.) NEAR RICKMANSWORTH. *J. Animal Ecol.* 38(3): 547-553, 3 figs. Oct. 1969. *WR 137: 61*
[Portsmouth Coll. Technol., Portsmouth, England.]

Holcomb, Larry C. AGE-SPECIFIC MORTALITY OF AMERICAN GOLDFINCH NESTLINGS. *Auk* 86(4): 760-761, 1 fig. Oct. 1969. *WR 137: 61*
[Creighton Univ., Omaha, Nebr.] There was an increased rate of loss of nestling goldfinches *(Spinus tristis)* after the age of 3 days until age 9 days. No loss occurred after age 9 days, although the young remained in the nest until 12.3 days of age.--Courtesy/ Paul A. Stewart.

Kale, Herbert W. II, Margaret H. Hundley, and James A. Tucker. TOWER-KILLED SPECIMENS AND OBSERVATIONS OF MIGRANT BIRDS FROM GRAND BAHAMA ISLAND. *Wilson Bull.* 81(3): 258-263. Sept. 1969. *WR 137: 61*
[Entomol. Res. Center, Vero Beach, Fla.] An annotated list of occurrence records based on birds killed at TV towers during October 1966.--Courtesy/ Paul A. Stewart.

Laskey, Amelia R. T.V. TOWER CASUALTIES AT NASHVILLE IN AUTUMN 1968. *Migrant* 40(2): 25-27. June 1969. *WR 137: 61*
[1521 Graybar Lane, Nashville, Tenn.] Casualties collected in autumn 1968 at two locations in Nashville totaled 5,734 birds of 78 spp.

Morejohn, G. Victor. BRANDT CORMORANT KILLED BY FISH. *Auk* 86(3): 555-556, 1 fig. July 1969. *WR 137: 61*
[San Jose State Coll., San Jose, Calif.] The Brandt cormorant *(Phalacrocorax penicillatus)* had a midshipman *(Porichthys notatus)* lodged in its throat.--Courtesy/ Paul A. Stewart.

Ricklefs, Robert E. AN ANALYSIS OF NESTING MORTALITY IN BIRDS. *Smithsonian Contribution Zool.* no. 9. iv + 48 p., 11 figs. 1969. For sale by Supt. Documents at 55¢. *WR 137: 61*
[Univ. Pa., Philadelphia.] The "analysis is divided into three major sections. First, mortality factors are identified, characterized, and quantified for Temperate Zone altricial land birds in detail. Secondly, there is a comparative study of nesting mortality of passerine birds in three other geographical areas: arctic North America, humid tropical areas of Central America and northern South America, and an arid tropical area in South America. Finally, nesting mortality in other groups is surveyed and the relative effects of mortality factors are compared with passerine species. In the discussion, the results of these analyses are brought together into a general statement on the factors influencing the outcome of reproductive efforts of birds. Concluding remarks are offered on the limits to which mortality may be reduced through adaptation."

Valum, Brynjulf. FUGLEDOD MOT GLASSVEGGER. [BIRD DEATH AGAINST GLASS WALLS.] *Sterna* 8(1): 15-20, illus. 1968. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 61*

Vincent, Jack. MORTALITY AMONG SWALLOWS *HIRUNDO RUSTICA*. *Lammergeyer* no. 10. p. 97-98. June 1969. *WR 137: 61*
Migrating swallows died in great numbers in northeastern Zululand. A random selection of 100 birds was sent for analysis, which revealed an average of 70 ppm DDT present in body tissues.

BIRDS--PARASITES & DISEASES

Barus, V., and O. H. Garrido. NEMATODES PARASITIC IN BIRDS OF THE ORDER PASSERIFORMES IN CUBA. *Folia Parasitologica* 15: 147-160. 1968. [From Auk 86 (4), 1969.] *WR 137: 62*

Casto, Stanley D. BEAUTY IS ONLY FEATHER DEEP. *Bull. Texas Ornithol. Soc.* 3(1): 2-4, illus. Jan.-Mar. 1969. *WR 137: 62*
A survey of the common external and internal parasites of birds.

Fay, L. D. SUMMARY OF THE BOTULISM SURVEILLANCES 1967 AND 1968. *Mich. Dept. Nat. Resources, Res. & Development Rept.* no. 166. 8 p. 16 May 1969. *WR 137: 62*
Numbers of sick and dead birds reported to the Research and Development Division are tabulated.

Williams, I. C., and I. Newton. INTESTINAL HELMINTHS OF THE BULLFINCH, *PYRRHULA PYRRHULA* (L.) IN SOUTHERN ENGLAND. *Proc. Helminthol. Soc. Washington* 36: 76-83. 1969. [From Auk 86(4), 1969.] *WR 137: 62*

GAME BIRDS--GENERAL

Edwards, William R., and Jack A. Ellis. RESPONSES OF THREE AVIAN SPECIES TO BURNING. *Wilson Bull.* 81(3): 338-339. Sept. 1969. *WR 137: 62*
[Ill. Nat. Hist. Surv., Urbana.] Bobwhites *(Colinus virginianus)*, woodcocks *(Philohela minor)*, and mourning doves *(Zenaidura macroura)*, visited a burned-over area close behind the fire.--Courtesy/ Paul A. Stewart.

Kellogg, Forest Edwin III. PARASITE AND DISEASE STUDIES ON SOUTHEASTERN GAME BIRDS. *Ph.D. thesis, Univ. Ga.* iv + 97 p., 6 figs. May 1969. *WR 137: 62*
Bobwhite quail from high population density samples generally had heavier individual parasite burdens than did quail from low population areas or pen-raised quail. Wild turkeys from four states were examined for ectoparasites. Turkeys were much more susceptible to *Histomonas meleagridis* than the quail, which could possibly serve as reservoir hosts for blackhead in the turkey.--From abstr.

Osmolovskaya, V. I. [ARTIFICIAL SETTLEMENT OF GAME BIRDS AS A MEANS OF MAINTAINING AND INCREASING THEIR ABUNDANCE.] *Bull. Moscow Obshch. Ispit. Prirody (Biol.)* 74(1): 15-24. 1969. [From Biol. Abstr. 50(24), 1969. In Russian with English summ.] *WR 137: 62*

Raitis, Tapio, and Matti Helminen. KEIHÄSMATO--KANALINTUJEMME YLEISIN SUOLISTOLOINEN. [*ASCARIDIA COMPAR*--THE MOST FREQUENT INTESTINAL PARASITE OF GALLINACEOUS BIRDS IN FINLAND.] *Suomen Riista* 21: 27-39, 5 figs. 1969. In Finnish with English summ. *WR 137: 62*

QUAIL

Durell, James S. QUAIL TREES--INDIAN FIELDS AND BLUEGRASS PASTURES. *Ky. Happy Hunting Ground* 26(1): 22-24, illus. Jan. 1970. *WR 137: 62*
Synopsis: Scarcity of open, ungrazed grassland probably is a major reason for the scarcity of quail in the Bluegrass and Mountain regions. This is essential for nesting cover, but game managers normally plow part of this land to plant food plots. The pressure for food plots can be lessened by developing larger food-producing trees, such as oaks, pines, sassafras, black locust, white ash and beech. There is strong reason to believe that these were among the most important quail foods before the white man came to America.

QUAIL--Continued

Ellis, Jack A., William R. Edwards, and Keith P. Thomas. RESPONSES OF BOBWHITES TO MANAGEMENT IN ILLINOIS. *J. Wildl. Mgmt.* 33(4): 749-762. Oct. 1969. *WR 137: 63*

[Ill. Nat. Hist. Surv., Effingham.] Abstract: Populations of bobwhite *(Colinus virginianus)* responded favorably to habitat management programs in southern Illinois based on a combination of sharecropping and prescribed burning, and on burning alone. The programs based on burning and sharecropping offered pronounced economic advantages over those based on intensive planting of food and cover. Populations on study areas managed under an intensive system of annual food patches and cover plantings were not successful when measured against regional indices of quail abundance. Management, to be effective, must recognize the bobwhite as a successional species and must provide appropriate patterns of succession. Creation of appropriate patterns of succession requires a system of periodic disturbance. The goal is to manage succession, not to develop habitat. Programs of prescribed burning and sharecropping offer a basis for management which can be both ecologically and economically feasible.

McNabb, F. M. A. A COMPARATIVE STUDY OF WATER BALANCE IN THREE SPECIES OF QUAIL. 1. WATER TURNOVER IN THE ABSENCE OF TEMPERATURE STRESS. *Comp. Biochem. Physiol.* 28: 1045-1058. 1969. [From Auk 86(4), 1969.] *WR 137: 63*

McNabb, F. M. A. A COMPARATIVE STUDY OF WATER BALANCE IN THREE SPECIES OF QUAIL. 2. UTILIZATION OF SALINE DRINKING SOLUTIONS. *Comp. Biochem. Physiol.* 28: 1059-1074. 1969. [From Auk 86(4), 1969.] *WR 137: 63*

Robeson, Stacy B. BOBWHITE FOR WESTERN NEW YORK? [*N.Y.*] *Conservationist* 24 (3): 8-9. Dec.-Jan. 1969-70. *WR 137: 63*

[Pacific Grove, Calif.] Two groups of birds were released in 1960-61 on a 2600-acre study area. Losses indicated unsuitable habitat for breeding activity.

Schumacher, Paul D. DEVELOPING BOBWHITE HABITAT ON FARMLANDS. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 196-200, 1 fig. 1969. *WR 137: 63*

[SCS, Athens, Ga.] Where landowners are willing to sacrifice as much as 5% of their cropland, pastureland, or woodland for the production of wildlife, an association of food and cover crops can be grown that will result in increased numbers and better distribution of bobwhites. Field trials conducted during the past three years indicate that the production of bobwhites can be increased if this type of year-around food and cover plantings is provided.--From summ.

Williams, H. Warrington. VOCAL BEHAVIOR OF ADULT CALIFORNIA QUAIL. *Auk* 86 (4): 631-659, 10 figs. Oct. 1969. *WR 137: 63*

[Westminster Coll., Fulton, Mo.] Fourteen calls of adult California quail *(Lophortyx californicus)* were analyzed by means of audiospectrograph, and the calls were correlated with cause and function.--Courtesy/ Paul A. Stewart.

PHEASANTS

Anderson, William L. CONDITION PARAMETERS AND ORGAN MEASUREMENTS OF PHEASANTS FROM GOOD, FAIR, AND POOR RANGE IN ILLINOIS. *J. Wildl. Mgmt.* 33(4): 979-987, 1 fig. Oct. 1969. *WR 137: 63*

[Ill. Nat. Hist. Surv., Urbana.] Weights of selected muscular tissues, fat deposits, and internal organs were determined for 75 hen pheasants *(Phasianus colchicus)*, 58 juveniles and 17 adults, captured on areas located near Sibley (good range), Humboldt (fair range), and Neoga (poor range), Illinois, during October, 1966, January, 1967, and February, 1968. It was concluded, in part, that during fall and winter months in Illinois (1) pheasants in poor and in fair range probably do not suffer from gross imbalances of basic organic nutrients, (2) juvenile pheasants in poor and in fair range apparently are stressed less than juveniles in good range, and (3) pheasants in poor range possibly absorb less calcium than pheasants in fair and in good range.--From abstr.

Bartmann, Richard M. PHEASANT NESTING ON SOIL BANK LAND IN NORTHERN UTAH. *J. Wildl. Mgmt.* 33(4): 1020-1023. Oct. 1969. *WR 137: 64*
[Little Hills Game Expt. Sta., Meeker, Colo.] Abstract: Pheasant *(Phasianus colchicus)* nesting use of soil bank land was observed on a 3,719-acre dryland study area in northern Utah during 1964 and 1965. A projected 85 percent of all successful nests were produced on 43 percent of the area retired under the Conservation Reserve Program of the Soil Bank. Absence of nests both years on sample plots in grainfields suggests low nesting use of this type which, together with summer fallow, comprised 41 percent of the area. Recommendations for future land retirement programs in similar dryland situations include early developing plant species and provision for residual cover carry-over for early nesting, long-term contracts, and emphasis within established pheasant range.

Frank, Edward J., and Eugene E. Woehler. PRODUCTION OF NESTING AND WINTER COVER FOR PHEASANTS IN WISCONSIN. *J. Wildl. Mgmt.* 33(4): 802-810. Oct. 1969. *WR 137: 64*
A program of habitat manipulation seemed to maintain ring-necked pheasant *(Phasianus colchicus)* populations and hunting success on a 16,000-acre study area in southern Wisconsin. In some cases, local population responses of pheasants to management were swift and dramatic. On well-drained, upland sites canary grass *(Phalaris arundinacea)*, Blackwell switchgrass *(Panicum virgatum)*, and bromegrass *(Bromus inermis)* produced the most satisfactory type of nesting cover. On muck or peat soils, canary-grass and timothy *(Phleum pratense)* gave best results. Spring seeding was most successful on mineral soils, while on muck or peat soils August seeding was most successful. Lodging of nesting cover was a problem on organic soils and on fertile uplands when rainfall was above average in May and June. Forage sorghums *(Sorghum bicolor)* and sorghum-sudan grass hybrids *(S. bicolor* x *S. sudanense)*, established annually, provided good winter cover on upland sites during a single growing season. Such cover was useful on diverted croplands, as interim winter cover until woody plantings furnished protective cover, or as cover near annual food patches.--Abstract.

Gajić, Ivan, and Vladislava Jović. AKTIVNOST FAZANA U TOKU 24 CASA. [TWENTY-FOUR HOURS' ACTIVITY OF ADULT PHEASANTS IN COURSE OF A YEAR.] *Jelen* 8: 83-91, 6 figs. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 64*
Results of penned pheasant behavior studies made three days per month during 1966.--From summ.

Gajić, Ivan, and Vladislava Jović. UTICAJ BROJA FAZANA U BOKSU I NJEGOVE POVRŠINE NA NOSIVOST, OPLOĐENOST JAJA I SMRTNOST EMBRIONA. [INFLUENCE OF THE NUMEROUSNESS OF PHEASANTS IN A BOX AND OF ITS AREA UPON LAYING AND FECUNDITY OF EGGS AND MORTALITY OF EMBRYOS.] *Jelen* 8: 93-97. 1969. In Serbo-Croatian with Russian and English summ. *WR 137: 64*

Jones, Robert L., Ronald F. Labisky, and William L. Anderson. SELECTED MINERALS IN SOILS, PLANTS, AND PHEASANTS: AN ECOSYSTEM APPROACH TO UNDERSTANDING PHEASANT DISTRIBUTION IN ILLINOIS. *Ill. Nat. Hist. Surv. Biol. Notes* no. 63. 8 p., 1 fig. Dec. 1968. *WR 137: 64*
[Univ. Ill., Urbana.] None of the elemental differences found in the soils, plant seeds, or pheasant feathers from the pheasant-poor area on Illinoian drift (Neoga) and from the pheasant-rich area in Wisconsinan drift (Sibley) is satisfactory to explain the magnitude of difference in population levels between the two areas. Differences did exist between the areas in concentrations of sodium, potassium, calcium, and magnesium in soils; of magnesium in corn; of potassium in foxtail; and of sodium, potassium, and magnesium in pheasant feather.

Labisky, Ronald F. TRENDS IN PHEASANT ABUNDANCE IN ILLINOIS: 1958 TO 1968. *Ill. Nat. Hist. Surv. Biol. Notes* no. 65. 8 p., 4 figs. May 1969. *WR 137: 64*
[Ill. Nat. Hist. Surv., Urbana.] Distribution and abundance of pheasants in Illinois in 1968 are compared to results of censuses taken in 1963 and 1958.

Ogasawara, Ko. [WINTER HABITATS AND FOOD HABITS OF THE GREEN AND COPPER PHEASANTS.] *Misc. Repts. Yamashina's Inst. Ornithol. Zool.* 5(4): 351-362, illus. 1968. [From Biol. Abstr. 50(24), 1969. In Japanese with English summ.] *WR 137: 65*
[University, Akita City, Akita, Japan.]

GROUSE, PARTRIDGE, ETC.

Bergerud, A. T., and D. S. Huxter. EFFECTS OF HUNTING ON WILLOW PTARMIGAN IN NEWFOUNDLAND. *J. Wildl. Mgmt.* 33(4): 866-870, 4 figs. Oct. 1969. *WR 137: 65*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: Liberal hunting regulations were established in 1962 to increase the percentage harvest of a declining population of willow ptarmigan *(Lagopus lagopus)* on two barrens on the Avalon Peninsula, Newfoundland. An estimated 40 percent of the birds were harvested on one of the barrens and 70 percent on the other. In the years 1955-1961, an average of only 13 percent of the birds had been harvested annually. There was no evidence that the increased kill accelerated the decline of the breeding population. Spring pair densities in 1963 were greater on the barren, subjected to a 70 percent removal the prior autumn, than on the barren where only 40 percent of the birds were taken.

Bergerud, A. T., and D. S. Huxter. BREEDING SEASON HABITAT UTILIZATION AND MOVEMENT OF NEWFOUNDLAND WILLOW PTARMIGAN. *J. Wildl. Mgmt.* 33(4): 967-974, 6 figs. Oct. 1969. *WR 137: 65*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: The summer habitat requirements of willow ptarmigan *(Lagopus lagopus)* were investigated on two study areas in Newfoundland. The Empetrum-Cladonia association was used most frequently as nesting cover. Broods in July and August were most frequently found in the Empetrum-Cladonia plant association where the cover was less than 8 inches tall. Summer brood ranges were not mutually exclusive. The distance between consecutive observations of broods was greatest in the study area having the least interspersion of plant associations. Pair densities may have been positively correlated with plant interspersion and abundance of *Abies* cover.

Berner, Alfred, and Leslie W. Gysel. HABITAT ANALYSIS AND MANAGEMENT CONSIDERATIONS FOR RUFFED GROUSE FOR A MULTIPLE USE AREA IN MICHIGAN. *J. Wildl. Mgmt.* 33(4): 769-778, 2 figs. Oct. 1969. *WR 137: 65*
[Minn. Div. Fish & Game, Madelia.] Abstract: Observations of ruffed grouse *(Bonasa umbellus)* and analysis of grouse habitat were made during all seasons for 2 years in aspen, lowland, hardwood, and northern hardwood types on glacial moraines in the Manistee National Forest in Wexford County, Michigan. The areas containing the necessary diversity for grouse were centered around drainage areas where there was a gradual transition from a lowland soil (α gley) to a well-drained upland soil. This transition zone was, in most cases, dominated by trembling aspen *(Populus tremuloides)*, and was the focal point of the brood range. The aspen type appeared to be important because of the available food, and because of the moderately dense shrub and herbaceous layers under the canopy. Grouse management would be most fruitful if done in the transition zone. Clear cutting in short cycles (10 years) is recommended, with a 40-year rotation to maintain even-age stands in different age-classes in close proximity to each other. At least 10 percent of the habitat should be kept in small permanent shrub openings which will provide food and cover species for broods and adults.

Carr, Harold D. A LITERATURE REVIEW ON EFFECTS OF HERBICIDES ON SAGE GROUSE. *Colo. Div. Game, Fish & Parks Spec. Rept.* no. 13. iv + 16 p. Aug. 1968. Price $1.00. *WR 137: 65*
Abstract: Spraying sagebrush with 2,4-D for sagebrush control influences sage grouse mainly through habitat changes. The effects of these habitat changes on sage grouse primarily concern food and cover. The densities of sagebrush and forbs decrease while density of grasses increases following the spraying of

sagebrush ranges with 2,4-D, resulting in improved soil stability and water retention. Sagebrush may repopulate sprayed areas, particularly if less than 75% of the sagebrush was killed by the initial spraying. Re-establishment of sage is influenced by grazing management and responses of grasses.

Christisen, Donald M. NATIONAL STATUS AND MANAGEMENT OF THE GREATER PRAIRIE CHICKEN. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 207-217, 1 fig. 1969. *WR 137: 66*
[Mo. Dept. Conserv., Columbia.] *"Tympanuchus cupido pinnatus."*

Dobrinskii, L. N., and A. P. Nikul'tsev. [STUDY OF POPULATION ECOLOGY OF TETRAONIDAE BIRDS BY MEANS OF MORPHO-PHYSIOLOGICAL INDICES.] *Zool. Zhur.* 48(4): 573-578. 1969. [From Biol. Abstr. 50(21), 1969. In Russian with English summ.] *WR 137: 66*
[Inst. Plant Anim. Ecol. Ural Br., Acad. Sci. USSR, Sverdlovsk, USSR.]

Lahtinen, Jukka. METSÄKANALINTUJEN TARHAKASVATUKSISTA KEURUULLA 1966-68. [ON THE REARING OF TETRAONID BIRDS IN CAPTIVITY IN KEURUU, CENTRAL FINLAND IN 1966-68.] *Suomen Riista* 21: 140-149, 4 figs. 1969. In Finnish with English summ. *WR 137: 66*

Lind, Esko A. METSÄKANALINTUJEN RUOKAILUPELTOJEN RAKENTEESTA. [THE STRUCTURE OF FEEDING FIELDS OF TETRAONID BIRDS.] *Suomen Riista* 21: 40-48, 2 figs. 1969. In Finnish with English summ. *WR 137: 66*

Loyttyniemi, K. [ON EATING OF TERMINAL SHOOTS OF PINE SEEDLINGS BY THE BLACK GROUSE *(LYRURUS TETRIX* L.*)* IN A NURSERY.] *Silva Fenn.* 2(4): 264-266. 1968. [From Bibliog. Agr. 33(10), 1969. In Finnish with English summ.] *WR 137: 66*

Pulliainen, E., L. Paloheimo, and L. Syrjala. DIGESTIBILITY OF BLUEBERRY STEMS *(VACCINIUM MYRTILLUS)* AND CROWBERRIES *(VACCINIUM VITIS-IDAEA)* IN THE WILLOW GROUSE *(LAGOPUS LAGOPUS). Ann. Acad. Sci. Fennica, Ser. A.* 4, no. 126. 15 p. 1968. [From Auk 86(3), 1969.] *WR 137: 66*

Pulliainen, E., and E. Tanhuanpää. PLUMINIDAL SINUS (EPIDERMOID CYST) ON THE BACK OF A MALE HAZEL GROUSE *(TETRASTES BONASIA* L.*). Ann. Zool. Fennica* 5: 270-272. 1968. [From Auk 86(4), 1969.] *WR 137: 66*

Pulliainen, Erkki. RIEKON JA KIIRUNAN SAALISKUVA POHJOIS-SUOMESSA METSÄSTYSKAUSINA 1966/67 JA 1967/68. [SEX AND AGE RATIOS IN THE BAG OF THE WILLOW GROUSE AND ROCK PTARMIGAN IN NORTHERN FINLAND IN THE YEARS 1966/67 AND 1967/68.] *Suomen Riista* 21: 108-115, 2 figs. 1969. In Finnish with English summ. *WR 137: 66*

Pynnönen, Alpi. METSÄKANALINTUJEN ENTISESTÄ RUNSAUDESTA ETUPÄÄSSÄ KONNEVEDEN PITÄJÄN ALUEELLA. [ON THE FORMER ABUNDANCE OF TETRAONID BIRDS IN THE KONNEVESI AREA, CENTRAL FINLAND.] *Suomen Riista* 21: 16-21. 1969. In Finnish with English summ. *WR 137: 66*

Rajala, Paavo. TEERIKOIRAS FASAANIPARVESSA SEKÄ ERÄITÄ TAPAUKSEEN LIITTYVIÄ NÄKÖKOHTIA. [THE OCCASIONAL FEEDING COMPANION OF A MALE BLACK GROUSE *(LYRURUS TETRIX)* WITH PHEASANTS *(PHASIANUS COLCHICUS)* AND SOME IDEAS CONTRIBUTING TO IT.] *Suomen Riista* 21: 96-107, 4 figs. 1969. In Finnish with English summ. *WR 137: 66*

Rajala, Paavo. METSÄKANALINTUKANNAT ELOKUUSSA 1968 REITTIARVIOINTIEN MUKAAN. [FINNISH TETRAONID POPULATIONS IN AUGUST 1968 ACCORDING TO ROUTE-CENSUS.] *Suomen Riista* 21: 128-135, 6 figs. 1969. In Finnish with English summ. *WR 137: 66*

Robel, Robert J. MOVEMENTS AND FLOCK STRATIFICATION WITHIN A POPULATION OF BLACKCOCKS IN SCOTLAND. *J. Animal Ecol.* 38(3): 755-763, 1 fig. + 1 pl. Oct. 1969. *WR 137: 67*

[Kans. State Univ., Manhattan.] Radio telemetry equipment is well suited to studies of black grouse populations, and gives access to data otherwise unobtainable. No major changes occur in the home ranges or mobility of blackcocks during the autumn and winter. Flock stability is weakest in autumn and winter but becomes stronger in the spring. During the spring, the blackcock population is stratified into two segments, one a stable lekking flock and the other a less cohesive non-lekking group. In the spring, the lekking flock is more conspicuous, less wary and less mobile than the non-lekking group.--From concl. and summ.

Savage, David E. THE RELATIONSHIP OF SAGE GROUSE TO UPLAND MEADOWS IN NEVADA. *Trans. 16th Ann. Meeting Calif.-Nev. Sec. Wildl. Soc.* p. 8-17. 1969. *WR 137: 67*

[Nev. Fish & Game Comm., Reno.]

Savage, David E., James A. Young, and Raymond A. Evans. UTILIZATION OF MEDUSAHEAD AND DOWNY BROME CARYOPSES BY CHUKAR PARTRIDGES. *J. Wildl. Mgmt.* 33 (4): 975-978, 1 fig. Oct. 1969. *WR 137: 67*

[Nev. Fish & Game Comm., Reno.] Abstract: Chukar partridges *(Alectoris graeca)* in separate groups were fed rations consisting of caryopses of downy brome *(Bromus tectorum)* and medusahead *(Taeniatherum asperum)*, and commercial game farm pellets. The birds readily ingested the caryopses of both grasses. The caryopses of medusahead appeared to be largely indigestible. Severe weight losses occurred when birds were fed caryopses of either species. Birds fed downy brome appeared in better condition than those fed medusahead.

Southwood, T. R. E., and D. J. Cross. THE ECOLOGY OF THE PARTRIDGE. III. BREEDING SUCCESS AND THE ABUNDANCE OF INSECTS IN NATURAL HABITATS. *J. Animal Ecol.* 38(3): 497-509, 3 figs. Oct. 1969. *WR 137: 67*

[Imperial Coll., London, England.]

TURKEY

Byrd, Elon E., and Annie K. Prestwood. A NEW GENUS AND SPECIES, *PSILOTORNUS AUDACIRRUS* (TREMATODA: DIGENEA: PSILOSTOMATIDAE), FROM THE WILD TURKEY IN ALABAMA. *Trans. Am. Microscop. Soc.* 88(3): 366-369, 7 figs. 1969. *WR 137: 67*

[Univ. Ga., Athens.]

Cherry, Thad. INTERNAL PARASITES OF NORTH CAROLINA WILD TURKEYS. *Wildl. in N.C.* 33(12): 8-9, illus. Dec. 1969. *WR 137: 67*

[N.C. Wildl. Resources Comm., Raleigh.] Entrails from 94 turkeys were examined for intestinal parasites. Nematodes and cestodes were in all but 7 of the birds. One species of trematode was found in a single specimen.

Dickneite, Dan F. RETURN OF A MONARCH. *Mo. Conservationist* 31(1): 4-5, 2 [figs.]. Jan. 1970. *WR 137: 67*

[Mo. Dept. Conserv., Jefferson City.] Southeastern Missouri has been repopulated with native wild turkeys released into suitable habitat. Since initial stocking began 14 years ago, 38 counties have been opened for spring gobbler seasons.

Proud, John C. WILD TURKEY STUDIES IN NEW YORK BY RADIO-TELEMETRY. *N.Y. Fish & Game J.* 16(1): 46-83, 17 figs. Jan. 1969. *WR 137: 67*

[N.Y. Coop. Wildl. Res. Unit, Ithaca.] Abstract: A 26MC/S radio-telemetry system adequate for locating wild turkeys at distances up to 2 miles was assembled. One mile was accepted as the average range of the system and accuracy was established as within ±15.8° (P=0.05) of a determined radio-bearing. Calculated life of transmitting units was not realized in any of 11 instances. Eleven wild turkeys were equipped with transmitters and tracked during the spring in

TURKEY--Continued

1965 and 1966. Tracking was carried out on three areas. Two strains of turkeys were involved, wild-trapped birds transferred from southwestern New York and resident birds that derived from plantings of game farm stock. Transferred wild birds were tracked over relatively large areas, whereas those of game farm origin were notably sedentary and exhibited other behavior considered atypical of the native eastern wild turkey.

Williams, Lovett E., Jr., and David H. Austin. LEG SPURS ON FEMALE WILD TURKEYS. *Auk* 86(3): 561-562, 1 fig. July 1969. *WR 137: 68*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] Courtesy/ Paul A. Stewart.

DOVES & PIGEONS

Brisbin, I. Lehr, Jr. BIOENERGETICS OF NIGHTLY WEIGHT LOSS IN A CAPTIVE RING DOVE. *Oriole* 34(2): 17-24. June 1969. *WR 137: 68*
[Savannah River Ecol. Lab., Aiken, S.C.] Nightly weight loss and daily caloric intake were determined for a single male ring dove feeding on a diet of known caloric density for a period of 20 days. Nightly weight loss averaged 5.2% of the morning weight, and caloric intake averaged 59.0 kcal/day. On a day-to-day basis, there was no significant correlation between daily caloric intake and weight loss during either the previous or following night. There was also no significant correlation between weight loss during a day of food deprivation and weight loss during either the previous or following night. Apparently, nightly weight loss in this species under captive conditions has little value as a predictor of caloric intake or other bioenergetic parameters on a short-term basis, although on a longer-term basis, more valid estimates may be obtainable.--From summ.

Harrison, C. J. O. SOME COMPARATIVE NOTES ON THE PEACEFUL AND ZEBRA DOVES *(GEOPELIA STRIATA* SSP.*)* WITH REFERENCE TO THEIR TAXONOMIC STATUS. *Emu* 69(2): 66-71. Aug. 1969. *WR 137: 68*
[14 Dawlish Avenue, Perivale, Middlesex, England.]

McLaughlin, E. T. PIGEON MALARIA IN SAN JUAN, PUERTO RICO. *Caribbean J. Sci.* 8: 101-102. 1968. [From Auk 86(3), 1969.] *WR 137: 68*
Of 35 *Columba livia*, 24 were infected with *Haemoproteus columbae*, the only haematozoan found. A hippoboscid, *Pseudolynchia canariensis*, is the probable vector.

Rolan, Robert G., and Gordon Leidahl. *MAYHEWIA NEBRASKENSIS*, SP. N., A CESTODE FROM THE ROCK DOVE, *COLUMBA LIVIA*. *Am. Midland Nat.* 82(2): 598-600, 1 fig. Oct. 1969. *WR 137: 68*
[Cleveland State Univ., Cleveland, Ohio.]

Szlivka, L. NEUERE ANGABEN ÜBER DIE TÜRKENTAUBE, *STREPTOPELIA DECAOCTO DECAOCTO* (FRIV.). [NEWER DATA UPON THE TURTLE DOVE *STREPTOPELIA DECAOCTO DECAOCTO* (FRIV.).] *Larus* 19(1965): 107-132. 1967. [From Auk 86(4), 1969. In German.] *WR 137: 68*

WATERFOWL

Anderson, Bertin W., and Dwain W. Warner. EVIDENCE FROM SALT GLAND ANALYSIS FOR CONVERGENCE OF MIGRATORY ROUTES AND POSSIBLE GEOGRAPHIC VARIATION IN LESSER SCAUP. *Bird-Banding* 40(3): 198-207. July 1969. *WR 137: 68*
[Univ. S. Dak., Vermillion.] The sizes of salt glands of lesser scaup ducks *(Aythya affinis)* differed widely presumably depending on whether the birds had earlier occupied salt or fresh water.--Courtesy/ Paul A. Stewart.

Andrews, Ralph, and Jerry R. Longcore. THE KILLING EFFICIENCY OF SOFT IRON SHOT. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 337-345, 1 fig. 1969. *WR 137: 69*

[Patuxent Wildl. Res. Center, Laurel, Md.] A unique automated shooting facility to test the killing effectiveness of soft iron shot under controlled conditions is described. Analysis of data (based on 2,010 ducks) indicated that the killing effectiveness of soft iron was superior to its anticipated performance and close to that obtained with commercial lead loads containing an equal number of pellets.

Aviatabile, Alphonse. EGG TRANSPORTATION BY A FEMALE MALLARD. *Wilson Bull.* 81(3): 331-332. Sept. 1969. *WR 137: 69*

[Univ. Conn., Waterbury.] Water had receded leaving the area around the nest dry.--Courtesy/ Paul A. Stewart.

Bagshaw, Clive, and Peter Curry. MASS BEHAVIOUR OF SHOVELERS. *British Birds* 62(7): 281-282. July 1969. *WR 137: 69*

[83 Earlham Grove, Weston-super-Mare, Somerset, England.] A small number of female *Anas clypeata* were encircled by drakes swimming two to four deep in a counterclockwise direction. All the shovelers kept their heads low and frequently uttered soft call notes.

Bartonek, James C., and Joseph J. Hickey. FOOD HABITS OF CANVASBACKS, REDHEADS, AND LESSER SCAUP IN MANITOBA. *Condor* 71(3): 280-290. July 1969. *WR 137: 69*

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] "The purpose of this paper is to present information on food habits of 175 canvasbacks *(Aythya valisineria)*, 99 redheads *(A. americana)*, and 71 lesser scaup *(A. affinis)* collected in southwestern Manitoba during the late spring, summer, and early fall, from 1959 to 1964. Primary emphasis is on juveniles and spring- and summer-collected adults."--Courtesy/ Paul A. Stewart.

Bartonek, James C., and Joseph J. Hickey. SELECTIVE FEEDING BY JUVENILE DIVING DUCKS IN SUMMER. *Auk* 86(3): 443-457, 4 figs. July 1969. *WR 137: 69*

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] The following are discussed: availability and quantity of potential foods, selective use of foods by ducklings, and factors influencing selectivity.--Courtesy/ Paul A. Stewart.

Batt, Bruce D. J. THE EFFECTS OF COLD ON MALLARD EMBRYOS. *M.S. thesis, Univ. Fla.* Aug. 1969. *WR 137: 69*

The hatchability of eggs exposed to cold prior to incubation was not lowered after 10 days storage at 8°C, but was lowered after 6 days storage at 0°C. Eggs exposed for 24 hours to a sub-freezing temperature prior to incubation, survived unaffected if they were not cracked from freezing. Resistance to cold decreased markedly during the latter stages of incubation. In all experiments with incubated embryos, the highest treatment temperatures (8°C) were the least harmful to embryonic development.--From abstr. Courtesy/ George W. Cornwell.

Bishop, Richard A., and Robert Barratt. CAPTURING WATERFOWL IN IOWA BY NIGHT-LIGHTING. *J. Wildl. Mgmt.* 33(4): 956-960. Oct. 1969. *WR 137: 69*

[Iowa Conserv. Comm., Clear Lake.] Abstract: A night-lighting technique was successful in capturing ducks and other marsh birds on shallow Iowa marshes in July and August. In 164 nights of night-lighting from 1965 through 1968, 5,084 ducks of 13 species were captured. An average of 31 ducks per night was captured for a catch rate that varied from 4.0 birds per two-man crew hour to 6.6 birds per crew hour. Local birds made up 55 percent, immatures 27 percent, and adults 18 percent of the birds captured. The cost per bird captured varied from $1.10 per bird in 1966, to $1.50 per bird in 1967 and 1968. Waterfowl production, weather, and marsh conditions were the three most important variables that determined capture success.

Braithwaite, L. W., and H. J. Frith. WATERFOWL IN AN INLAND SWAMP IN NEW SOUTH WALES. I. HABITAT. *CSIRO Wildl. Res.* 14(1): 1-16, 11 figs. Oct. 1969. *WR 137: 70*

[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: Cumbungi swamps are the most permanent waterfowl habitat in much of the inland of south-eastern Australia and are known to form valuable dry-weather refuges for many waterfowl and to provide favoured habitat at all times for some species. As part of a series of studies of the ecology of waterfowl in inland New South Wales the breeding and food of species found in such a swamp have been studied. This paper describes the general ecology of a cumbungi swamp and provides the introduction to a series of papers on the waterfowl encountered in it. [See Frith, et al., this section, for part II of this series.]

Braithwaite, L. W., and H. J. Frith. WATERFOWL IN AN INLAND SWAMP IN NEW SOUTH WALES. III. BREEDING. *CSIRO Wildl. Res.* 14(1): 65-109, 10 figs. Oct. 1969. *WR 137: 70*

[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: The breeding of nine species of waterfowl was investigated in a permanent swamp in inland New South Wales in a drought period. Some species were under study for 56 months and all nine were investigated concurrently for a period of one year. The sexual cycles of all species were determined by either one or both of two basic factors. First, fixed seasonal events that regulated breeding to the same general period each year, and second, the availability of certain preferred foods. The latter were considered to be particularly important for those species with erratic breeding seasons or breeding seasons of highly variable length. The three species, musk duck, blue-billed duck, and hardhead, that utilize deep-water habitats were shown to breed more regularly each year than the remaining six species that utilize shallow-water habitats, including the littoral zone and the edge of the swamp. Fixed annual factors then may be more influential in initiating the sexual cycle of those three species. Many of the phenomena in the breeding seasons seemed to be related to the nutritional status of the birds, which was determined by changes in the availability of certain foods. Many of the changes in the availability of food were determined by fluctuations in water level. It is concluded that the most important effects of variations in water level are changes in the food supply of adult birds, and these determine the breeding season.

Broekhuysen, G. J., and P. G. H. Frost. NESTING BEHAVIOUR OF THE BLACK-NECKED GREBE *PODICEPS NIGRICOLLIS* (BREHM) IN SOUTHERN AFRICA. I. THE REACTION OF DISTURBED INCUBATING BIRDS. *Bonner Zool. Beiträge* 19(3/4): 350-361. 1968. [From Bird-Banding 40(4), 1969.] *WR 137: 70*

Broekhuysen, G. J., and P. G. H. Frost. NESTING BEHAVIOUR OF THE BLACK-NECKED GREBE *PODICEPS NIGRICOLLIS* IN SOUTHERN AFRICA: II. LAYING, CLUTCH SIZE, EGG SIZE, INCUBATION AND NESTING SUCCESS. *Ostrich* 39(4): 242-252, illus. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 70*

[Univ. Cape Town, Cape Town, South Africa.]

Burgess, Harold H. HABITAT MANAGEMENT ON A MID-CONTINENT WATERFOWL REFUGE. *J. Wildl. Mgmt.* 33(4): 843-847. Oct. 1969. *WR 137: 70*

[Squaw Creek Natl. Wildl. Refuge, Mound City, Mo.] Abstract: Waterfowl use varied from 6 million to 27 million duck-days and from 7 million to 19 million goose-days annually at Squaw Creek National Wildlife Refuge during the period 1958-1967. Changes in waterfowl use were related to changes in habitat management and the resulting ecological succession. In general, annual use by ducks increased when the largest expanses of renewed marshes were flooded. Annual use by geese increased when the largest acreages of renewed marshes and succulent green browse were available.

Cowardin, Lewis M. USE OF FLOODED TIMBER BY WATERFOWL AT THE MONTEZUMA NATIONAL WILDLIFE REFUGE. *J. Wildl. Mgmt.* 33(4): 829-842, 3 figs. Oct. 1969. *WR 137: 71*

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: Waterfowl use of bottomland hardwood timber stands which were flooded and killed was studied at the Montezuma National Wildlife Refuge, Seneca Falls, New York, from 1962 to 1964. Comparisons of use were made among six habitat types containing dead timber, stumps, and no timber, and with and without emergent vegetation. An index to waterfowl use was derived by direct counts and by counts made with automatic cameras which photographed randomly selected plots in each habitat type. Movement between types was studied by observation of both marked and unmarked birds. The camera index of use showed that cut timber with emergent vegetation received the greatest overall use. Use was positively correlated with the proximity of the plot to emergent vegetation and nearest vegetative type boundary. A stand flooded for 7 years was used primarily by black ducks *(Anas rubripes)* and mallards *(A. platyrhynchos)*. Use of stands flooded for 20 years was dominated by American widgeon *(Mareca americana)*. Waterfowl spent more time resting than feeding in timbered areas, and more time feeding than resting in marsh areas. Young-of-the-year did not move between pools after they reached the age of IIc (Gollop and Marshall 1954). Use by broods was greatest in areas near emergent vegetation. Flying birds used timbered areas during the daytime and non-timbered areas at night during fall. Flooded dead timber appeared to be attractive to waterfowl because it furnished abundant loafing sites.

Curnow, Richard. RADIOACTIVE MALLARDS. *Colo. Outdoors* 18(6): 12-14, illus. Nov.-Dec. 1969. *WR 137: 71*

[Colo. State Univ., Fort Collins.] Such factors as age, sex, season of the year, and length of time spent in nonradioactive water appear to influence the rates that mallards absorb and lose their radioactive tag.

Duebbert, Harold F. HIGH NEST DENSITY AND HATCHING SUCCESS OF DUCKS ON SOUTH DAKOTA CAP LAND. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 218-229. 1969. *WR 137: 71*

[Northern Prairie Wildl. Res. Sta., Jamestown, N. Dak.]

Farmes, Robert E. CROP INSURANCE FOR WATERFOWL DEPREDATION. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 332-337. 1969. *WR 137: 71*

[Minn. Dept. Conserv., Thief River Falls.]

Fredrickson, Leigh H. AN EXPERIMENTAL STUDY OF CLUTCH SIZE OF THE AMERICAN COOT. *Auk* 86(3): 541-550. July 1969. *WR 137: 71*

[Gaylord Mem. Lab., Puxico, Mo.] American coots *(Fulica americana)* can successfully incubate a larger clutch than they do, and success of small clutches was lower than that of larger clutches. Particularly early in the incubation period, coots laid more when some eggs were experimentally removed from the nest.--From summ. Courtesy/ Paul A. Stewart.

Frith, H. J., L. W. Braithwaite, and J. L. McKean. WATERFOWL IN AN INLAND SWAMP IN NEW SOUTH WALES. II. FOOD. *CSIRO Wildl. Res.* 14(1): 17-64, 5 figs. Oct. 1969. *WR 137: 71*

[Div. Wildl. Res., CSIRO, Canberra, Australia.] Summary: The food of nine species of waterfowl has been studied in a drought refuge during a period of moderately severe drought. The species involved were the black swan, freckled duck, black duck, grey teal, shoveler, pink-eared duck, hardhead, musk duck, and blue-billed duck. In all, 3697 gizzards were examined. Although the black swan had certain food plants in common with most other species, particularly during periods of drought, and although the black duck and grey teal had nearly identical food requirements, serious competition between these species was considered unlikely for various reasons. Otherwise, the species were well separated in their feeding places, depths of water utilized, and food collected. The value of cumbungi swamps as drought refuges is discussed and the adaptations of the waterfowl in utilizing these swamps are examined. [See Braithwaite, et al., this section, for parts I and III of this series.]

Geis, Aelred D., and Walter F. Crissey. EFFECT OF RESTRICTIVE HUNTING REGULATIONS ON CANVASBACK AND REDHEAD HARVEST RATES AND SURVIVAL. *J. Wildl. Mgmt.* 33(4): 860-866. Oct. 1969. *WR 137: 72*

[Migratory Bird Populations Station, Laurel, Md.] Abstract: Because of low population levels, there were especially restrictive hunting regulations between 1958-1965, including complete closures during the 1960-1963 seasons, for canvasback *(Aythya valisneria)* and redhead *(A. americana)* ducks. Banding data from 1952 through 1965 indicated that restrictive regulations reduced both harvest and annual mortality rates. During the period with very restrictive regulations, annual mortality-rate estimates ranged from 14 to 21 percent, much lower than before this period when estimates were 50 percent or higher.

Geis, Aelred D., R. Kahler Martinson, and David R. Anderson. ESTABLISHING HUNTING REGULATIONS AND ALLOWABLE HARVEST OF MALLARDS IN THE UNITED STATES. *J. Wildl. Mgmt.* 33(4): 848-859, 1 fig. Oct. 1969. *WR 137: 72*

[Migratory Bird Populations Station, Laurel, Md.] Abstract: As a major part of establishing hunting regulations each year in the United States, data for the mallard *(Anas platyrhynchos)* are examined extensively to estimate the effect of various harvest strategies on the breeding population the following spring. This requires estimates of the breeding-population level and of the production, harvest, and mortality rates. Predictions made at the time hunting regulations are established have been in general agreement with more reliable estimates made after the hunting season when data from banding, kill, and wing surveys are available.

Greenwood, Raymond J. MALLARD HATCHING FROM AN EGG CRACKED BY FREEZING. *Auk* 86(4): 752-754, 1 fig. Oct. 1969. *WR 137: 72*

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Courtesy/ Paul A. Stewart.

Hays, Helen, and Helen M. Habermann. NOTE ON BILL COLOR OF THE RUDDY DUCK, *OXYURA JAMAICENSIS RUBIDA*. *Auk* 86(4): 765-766. Oct. 1969. *WR 137: 72*

[14 East 95th St., New York, N.Y.] The blue bill color of the ruddy duck is caused by structural peculiarities and the distribution of melanin in the subsurface layer.--Courtesy/ Paul A. Stewart.

Heath, Robert G. NATIONWIDE RESIDUES OF ORGANOCHLORINE PESTICIDES IN WINGS OF MALLARDS AND BLACK DUCKS. *Pesticides Monitoring J.* 3(2): 115-123. Sept. 1969. *WR 137: 72*

[Patuxent Wildl. Res. Center, Laurel, Md.] Abstract: Nationwide monitoring of organochlorine pesticides in wings of more than 24,000 mallards and black ducks bagged during the 1965 and 1966 hunting seasons showed DDE to be the predominant residue, followed in order by DDT, DDD, dieldrin, and heptachlor epoxide. Residues were generally highest in wings from the Atlantic and Pacific Flyways, and lowest in the Central Flyway. DDE was reported for every State and notably high in wings from New Jersey, Massachusetts, Connecticut, Rhode Island, New York, Pennsylvania, Alabama, California, and Utah. Dieldrin residues were prevalent in wings from Arkansas, Texas, Utah, California, and several States in the Atlantic Flyway.

Higgins, Kenneth F., Leo M. Kirsch, and I. Joseph Ball, Jr. A CABLE-CHAIN DEVICE FOR LOCATING DUCK NESTS. *J. Wildl. Mgmt.* 33(4): 1009-1011, 1 fig. Oct. 1969. *WR 137: 72*

[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: A cable-chain device towed between two vehicles was developed for locating occupied duck nests in brushy, herbaceous, and grassy cover types. Twenty-three of 29 previously located gadwall *(Anas strepera)* and blue-winged teal *(A. discors)* hens were flushed from their nests with the drag for an efficiency of 79 percent. Eighty acres of nesting cover can be searched in 4-6 hours by the method described.

Hughes, Maryanne Robinson, and Frank E. Ruch, Jr. SODIUM AND POTASSIUM IN SPONTANEOUSLY PRODUCED SALT GLAND SECRETION AND TEARS OF DUCKS, *ANAS PLATYRHYNCHOS*, ACCLIMATED TO FRESH AND SALINE WATERS. *Canadian J. Zool.* 47(6): 1133-1138, 2 figs. Nov. 1969. *WR 137: 73*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Ivanter, E. V. [THE BIOLOGY OF THE MALLARD IN KARELIA.] *Ornitologiya* 9: 169-177. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 73*

Johnsgard, Paul A. SOME OBSERVATIONS ON MACCOA DUCK BEHAVIOR. *Ostrich* 39 (4): 219-222, illus. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 73*
[Univ. Nebr., Lincoln.]

Johnsgard, Paul A., and Dirk Hagemeyer. THE MASKED DUCK IN THE UNITED STATES. *Auk* 86(4): 691-695. Oct. 1969. *WR 137: 73*
[Univ. Nebr., Lincoln.] Contributes new occurrence records and first and second breeding records of *Oxyura dominica* in the United States. Also reports some observations of breeding biology.--Courtesy/ Paul A. Stewart.

Kauhanen, Heikki. VESILINNUSTOSTA ERÄISSÄ IISALMEN SEUDUN EUTROFISISSA JÄRVISSÄ. [ON THE AQUATIC BIRDS OF SOME EUTROPHIC LAKES IN THE VICINITY OF IISALMI (KUOPIO PROVINCE, FINLAND).] *Ornis Fenn.* 46(3): 132-135. 1969. In Finnish with German summ. *WR 137: 73*
[Iisalmi, Finland.]

Kirsch, Leo M. WATERFOWL PRODUCTION IN RELATION TO GRAZING. *J. Wildl. Mgmt.* 33(4): 821-828. Oct. 1969. *WR 137: 73*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: A 4-year production study of upland nesting waterfowl on the Missouri Coteau area of North Dakota showed that pair numbers, nesting densities and nest success were generally reduced by grazing. It is suggested that cover removal such as regular grazing and mowing be discontinued on areas managed primarily for waterfowl production and that management practices which create dense rank cover be substituted.

Martz, Gerald F., Gordon L. Zorb, and Marvin K. Johnson. QUALIFYING TO HUNT WATERFOWL THROUGH TESTING AND TRAINING / A PILOT STUDY. *Mich. Dept. Nat. Resources, Res. & Development Rept.* no. 173. 10 p., 2 figs. + unnumbered pages with tables. July 1969. *WR 137: 73*
Concern over poor hunter performance in shooting teal only during past teal seasons prompted Michigan to investigate testing and training procedures for waterfowl hunters. Testing reduced hunter numbers at Rose Lake Wildlife Research Center. The 1968 waterfowl bag was average, but the bag per hunter trip was the highest in Rose Lake records.--From abstr.

Mathisen, John E. USE OF MAN-MADE ISLANDS AS NESTING SITES OF THE COMMON LOON. *Wilson Bull.* 81(3): 331, 1 fig. Sept. 1969. *WR 137: 73*
[Chippewa Natl. Forest, Cass Lake, Minn.] Of 8 water areas with islands built for ducks, 6 had an island occupied by loons *(Gavia immer)*.--Courtesy/ Paul A. Stewart.

McDonald, Malcolm E. ANNOTATED BIBLIOGRAPHY OF HELMINTHS OF WATERFOWL (ANATIDAE). *US F&WS, Spec. Sci. Rept.--Wildl.* no. 125. ii + 333 p. June 1969. Available from Denver Wildlife Research Center, Denver, Colo. *WR 137: 73*
"This bibliography [2900 references] is an attempt to list all the publications dealing with helminths of waterfowl (Anatidae) -- reports of their occurrence, descriptions, classification, life history, and pathological effects. It brings up-to-date and revises the work published on microfilm in 1965 *(Wildlife Disease*, No. 45). [See *WR 132: 93.*] Studies on prophylaxis and treatment and on physiology, and general manuals and texts on poultry diseases are omitted. Publications issued before 1890 (numbering about 120) are also omitted."

McDonald, Malcolm E. CATALOGUE OF HELMINTHS OF WATERFOWL (ANATIDAE). *US F&WS, Spec. Sci. Rept.--Wildl.* no. 126. viii + 692 p. Aug. 1969. Available from Denver Wildlife Research Center, Denver, Colo. *WR 137: 74*
[Bear River Res. Sta., P.O. Box 459, Brigham City, Utah.] A revision of the catalog published in 1965 by the author in *Wildlife Disease* no. 46. [See *WR 132: 93.*] This revision includes new material (data from 560 additional references, with 154 additional parasites) and a number of corrections.

McKnight, Donald E., and Jessop B. Low. FACTORS AFFECTING WATERFOWL PRODUCTION ON A SPRING-FED SALT MARSH IN UTAH. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 307-314. 1969. *WR 137: 74*
[Utah Coop. Wildl. Res. Unit, Logan.]

Milstein, P. Le S. PRACTICAL CENSUS METHODS FOR WATERFOWL CONSERVATION IN THE TRANSVAAL [DUCKS, GEESE]. *Fauna Flora Transvaal* 19: 45-50, illus. 1968. [From Biol. Abstr. 50(23), 1969.] *WR 137: 74*

Nilsson, L. SEASONAL FLUCTUATIONS IN NUMBERS OF SWEDISH WINTER DUCKS. (REPORT NO. 3 OF THE WILDFOWL COUNTS IN SWEDEN.) *Vår Fågelvärld* 27: 142-171. 1968. [From Auk 86(3), 1969. In English.] *WR 137: 74*

Nilsson, Leif. INTERNATIONELLA MIDVINTERRÄKNINGARNA AV ÄNDER OCH SVANAR I SVERIGE 1967 OCH 1968. [THE INTERNATIONAL MID-WINTER CENSUSES OF DUCKS AND SWANS IN SWEDEN 1967, 1968. REPORT NO. 5.] *Vår Fågelvärld* 27(4): 333-344. 1968. [From Bird-Banding 40(3), 1969. In Swedish with English summ.] *WR 137: 74*

Nilsson, Leif. FOOD CONSUMPTION OF DIVING DUCKS WINTERING AT THE COAST OF SOUTH SWEDEN IN RELATION TO FOOD RESOURCES. *Oikos* 20(1): 128-135. 1969. [From Biol. Abstr. 50(20), 1969. In English with Russian summ.] *WR 137: 74*
[Univ. Lund, Lund, Sweden.]

Paulson, Dennis R. COMMENSAL FEEDING IN GREBES. *Auk* 86(4): 759. Oct. 1969. *WR 137: 74*
[Univ. Washington, Seattle.] In one set of observations the diving schedule of two horned grebes *(Podiceps auritus)* closely followed the diving schedule of a surf scoter *(Melanitta perepicillata)*. In another set of observations, three least grebes *(Podiceps dominicus)* were diving and following a group of feeding domestic mallards *(Anas platyrhynchos)*.--Courtesy/ Paul A. Stewart.

Pirkola, Matti K. TULOKSIA SORSALINTUJEN SIIPINÄYTEKERÄYKSESTÄ SYKSYLLÄ 1967. [RESULTS OF COLLECTION OF DUCKWINGS DURING AUTUMN 1967.] *Suomen Riista* 21: 49-59, 1 fig. 1969. In Finnish with English summ. *WR 137: 74*
Analysis based upon 460 wings.

Pirkola, Matti K. TAMMIKUUN KANSAINVÄLINEN VESILINTULASKENTA 1968. [THE IWRB WILDFOWL CENSUS IN FINLAND JANUARY 1968.] *Suomen Riista* 21: 82-95, 8 figs. 1969. In Finnish with English summ. *WR 137: 74*

Prince, Harold H., P. B. Siegel, and George W. Cornwell. HATCHABILITY, CLUTCH POSITION, AND HATCHING SEQUENCE IN MALLARDS. *Auk* 86(4): 762-763. Oct. 1969. *WR 137: 74*
[Mich. State Univ., East Lansing.] The relative hatching time of the different eggs in mallard *(Anas platyrhynchos)* clutches was related to the laying times.--Courtesy/ Paul A. Stewart.

Shearer, LeRoy A., Bert J. Jahn, and Lawrence Lenz. DETERIORATION OF DUCK FOODS WHEN FLOODED. *J. Wildl. Mgmt.* 33(4): 1012-1015, 1 fig. Oct. 1969. *WR 137: 74*
[SCS, Spokane, Wash.] Abstract: Eighteen kinds of seeds readily eaten by waterfowl were submerged in flooded fields to determine the percentage of deterioration. Samples were placed in nylon mesh bags and placed under water for 30-, 60-, and 90-day periods. Tests were conducted to correspond with the normal

period of flooding practiced by most owners of managed duck hunting fields in the State of Washington. Seeds showed varying degrees in rate and percentage of deterioration. Peas *(Pisum arvense)*, lentils *(Lens culinaris)*, and soybeans *(Glycine soja max)* showed the greatest deterioration, while salt marsh bulrush *(Scirpus robustus)*, smartweed *(Polygonum lapathifolium)*, and safflower *(Carthamus tinctorius)* showed the least. Sixteen of the waterfowl foods were then fed to wild mallards, *(Anas platyrhynchos)*, to determine palatability of the fermented seeds. Based on small field tests, fermented agricultural grains are readily accepted as food by mallards.

Skryabin, N. G. [THE ECOLOGY OF THE MALLARD ON LAKE BAIKAL.] *Izvest. Biol.-Geogr. Nauch.-Issled. Inst. Irkutsk. Univ.* 20: 333-335. 1967. [From Biol. Abstr. 50(22), 1969, from Referat. Zhur., Biol., 1968, no. 10I389. Transl. of Russian abstr.] *WR 137: 75*

Swennen, C. NEST PROTECTION OF EIDERDUCKS AND SHOVELERS BY MEANS OF FECES. *Ardea* 56(3/4): 249-258. 1968. [From Biol. Abstr. 50(21), 1969.] *WR 137: 75*
[Netherlands Inst. Sea Res., Den Helder, Netherlands.]

SWANS & GEESE

De Schneidauer, Thierry Robyns. LA POPULATION EXPERIMENTALE D'OIES CENDREES DANS LA RESERVE DU ZWIN. [THE EXPERIMENTAL POPULATION OF GREY GEESE *(ANSER ANSER)* IN THE GAME PRESERVE OF ZWIN (KNOKKE, BELGIUM).] *Ardea* 56(3/4): 228-247, illus. 1968. [From Biol. Abstr. 50(24), 1969. In French with Dutch and English summ.] *WR 137: 75*
[Sta. Biol., Zwin, Knokke, Belgium.]

Haapanen, Antti, Matti Helminen, and Hannu Suomalainen. JOUTSENTEN AMPUMIS-TAPAUKSET 1951-68. [ILLEGALLY SHOT WHOOPER SWANS 1951-68.] *Suomen Riista* 21: 76-81, 5 figs. 1969. In Finnish with English summ. *WR 137: 75*
Summary: The data on 34 illegally shot whooper swans show that most of them were shot during the autumn migration, normally outside their breeding range. The migration times of the bean goose and the whooper swan overlap, the latter being rather later. The swans are totally protected in Finland, but some, especially grey immatures, are easily shot as geese during the goose open season. Six cases have been apparent deliberate poaching.

Higgins, Kenneth F. BURSAL DEPTHS OF LESSER SNOW AND SMALL CANADA GEESE. *J. Wildl. Mgmt.* 33(4): 1006-1008. Oct. 1969. *WR 137: 75*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: Bursa of Fabricius depths of 88 lesser snow geese *(Anser c. caerulescens)* and 69 small Canada geese *(Branta canadensis hutchinsii/parvipes* complex) were measured. Bursal depths were unreliable indicators of age-classes of lesser snow geese and small geese; previously, the same had been found to be true for large Canada geese *(B. c. interior)*. Regression in size or closure of the bursa first occurred at 17-20 months of age (yearlings) in lesser snow geese and small Canada geese, but at 29-32 months of age (2-year-olds) in large Canada geese.

Higgins, Kenneth F., Raymond L. Linder, and Paul F. Springer. A COMPARISON OF METHODS USED TO OBTAIN AGE RATIOS OF SNOW AND CANADA GEESE. *J. Wildl. Mgmt.* 33(4): 949-956, 1 fig. Oct. 1969. *WR 137: 75*
[Northern Prairie Wildl. Res. Center, Jamestown, N. Dak.] Abstract: The validity of group counts, cannon-net catches, and hunter-bag checks for estimating productivity of lesser snow geese *(Anser caerulescens caerulescens)* and small Canada geese *(Branta canadensis hutchinsii-parvipes* complex) was studied at Sand Lake National Wildlife Refuge during the falls of 1965 and 1966. Age ratios of snow geese obtained from net-trapped samples were significantly higher *($P<0.01$)* than from group counts at the same site. Immature snow geese were shot in a significantly greater *($P<0.01$)* proportion than they existed in the population as determined by group counts. Cannon-net catches and hunter-bag checks

of snow and Canada geese yielded age ratios which were biased because of behavioral characteristics of the geese. Immatures of both species were less wary of trap equipment and immature snow geese were more vulnerable to the gun than adults. It was believed that age ratios from group counts of snow geese were more representative of the population than those from net catches and hunter-bag checks. Sex ratios of net-trapped geese showed a preponderance of males for adult Canada and adult and immature snow geese, whereas females were predominant in the immature segment of Canada geese. Hunter selectivity of blue- or white-phase snow geese was not observed at Sand Lake Refuge. Differential vulnerability to hunting between snow and Canada geese resulted from differences in feeding-flight behavior.

Hornocker, Maurice G. GOSLINGS DESCEND FROM AERIAL NEST, ATTACKED BY BALD EAGLE. *Auk* 86(4): 764-765. Oct. 1969. *WR 137: 76*
[Univ. Idaho, Moscow.] A brood of gosling Canada geese *(Branta canadensis)* jumped or fell to the ground from their nest about 50 ft up in a tree. A bald eagle *(Haliaetus leucocephalus)* made an unsuccessful attempt to capture the goslings after they had reached the ground.--Courtesy/ Paul A. Stewart.

Raveling, Dennis G. PREFLIGHT AND FLIGHT BEHAVIOR OF CANADA GEESE. *Auk* 86 (4): 671-681, 1 fig. Oct. 1969. *WR 137: 76*
[Canadian Wildl. Serv., 114-A Garry St., Winnipeg, Manitoba.] Behavior of *Branta canadensis* is discussed covering the periods before, during, and after take-off.--Courtesy/ Paul A. Stewart.

Sladen, William J. L., and William W. Cochran. STUDIES OF THE WHISTLING SWAN, 1967-1968. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 42-50, 3 figs. 1969. *WR 137: 76*
[Johns Hopkins Univ., Baltimore, Md.] Migration of *Cygnus columbus* was studied using a variety of techniques including trapping, banding, dyeing, radar tracking, and biotelemetry.

Sterbetz, I. DER ZUG DER ZWERGGANS AUF DER UNGARISCHEN PUSZTA. [THE MIGRATION OF THE DWARF GOOSE *(ANSER ERYTHROPUS)* ON THE HUNGARIAN PUSZTA.] *Ardea* 56(3/4): 259-266, illus. 1968. [From Biol. Abstr. 50(21), 1969. In German.] *WR 137: 76*

CRANES, RAILS, SHOREBIRDS

Ashmole, N. P. BODY SIZE, PREY SIZE, AND ECOLOGICAL SEGREGATION IN FIVE SYMPATRIC TROPICAL TERNS (AVES: LARIDAE). *Syst. Zool.* 17: 292-304. 1968. [From Auk 86(4), 1969.] *WR 137: 76*

Bauer, Willy, Karl Kliebe, and Rüdiger Wehner. DER LIMIKOLENZUG IN HESSEN. I. TEIL: DIE GATTUNGEN *TRINGA* UND *PHILOMACHUS*. [THE SHOREBIRD MIGRATION IN HESSE. PART 1: THE SPECIES *TRINGA* AND *PHILOMACHUS*.] *Luscinia* 39: 17-47. 1966. In German. *WR 137: 76*
[Schneckenhofstrasse 35, Frankfurt/Main, Germany.]

Bauer, Willy, Karl Kliebe, Jürgen Sartor, and Rüdiger Wehner. DER LIMIKOLENZUG IN HESSEN. II. TEIL: DIE GATTUNGEN *HAEMATOPUS, CHARADRIUS, EUDROMIAS, PLUVIALIS, VANELLUS, ARENARIA, CALIDRIS* UND *LIMICOLA*. [THE SHOREBIRD MIGRATION IN HESSE. PART 2: THE SPECIES *HAEMATOPUS, CHARADRIUS, EUDROMIAS, PLUVIALIS, VANELLUS, ARENARIA, CALIDRIS,* AND *LIMICOLA*.] *Luscinia* 40(3/4): 67-94, 16 figs. Sept. 1968. In German. *WR 137: 76*
[Schneckenhofstrasse 35, Frankfurt/Main, Germany.]

Bauer, Willy, Karl Kliebe, Jürgen Sartor, and Rüdiger Wehner. DER LIMIKOLENZUG IN HESSEN. II. TEIL. [THE SHOREBIRD MIGRATION IN HESSE. PART 2. (DISCUSSION).] *Luscinia* 40(5): 155-184. July 1969. In German with English summ. *WR 137: 76*
[Scheneckenhofstrasse 35, Frankfurt/Main, Germany.]

Blaker, D. BEHAVIOUR OF THE CATTLE EGRET *ARDEOLA IBIS*. *Ostrich* 40(3): 75-129, 27 figs. Sept. 1969. *WR 137: 77*
[Univ. Capetown, Rondebosch, Cape Province, South Africa.] Maintenance, displays, non-breeding behavior, breeding behavior, and behavior of the young.

Bochenski, Zygmunt. NESTING OF COMMON AND BLACK TERNS. *Acta Zool. Cracov.* 11(14): 423-449, illus. 1966. [From Biol. Abstr. 50(17), 1969.] *WR 137: 77*
"Sterna hirundo and *Chilidonias nigra."*

Brewer, A. D. BLACK TERNS FEEDING AFTER PLOUGHS. *British Birds* 62(7): 282. July 1969. *WR 137: 77*
[P.O. Box 1315, Fergus, Ontario, Canada.]

Bruun, Bertel. MIGRATION OF LITTLE GULL *(LARUS MINUTUS)* IN THE NORTH ATLANTIC REGION. *Dansk Ornithol. Foreningo Tidsskr.* 66(2): 126-136, illus. 1968. [From Biol. Abstr. 50(20), 1969. In English with Danish summ.] *WR 137: 77*
[317 West 83rd St., New York, N.Y.]

Causey, M. Keith, and Jerry B. Graves. INSECTICIDE RESIDUES IN LEAST BITTERN EGGS. *Wilson Bull.* 81(3): 340-341. Sept. 1969. *WR 137: 77*
[Auburn Univ., Auburn, Ala.] Dieldrin residues as high as 5.39 ppm were found in eggs of least bitterns *(Ixobrychus exilis)* collected in Louisiana rice fields. --Courtesy/ Paul A. Stewart.

Cooper, J. POSSIBLE INJURY OF SANDERLINGS BY *TRIDACNA* CLAMS. *Ostrich* 40(3): 136. Sept. 1969. *WR 137: 77*
[Post Bag 167H, Salisbury, Rhodesia.] *"Crocethia alba."*

Cottier, E. J., and David Lea. BLACK-TAILED GODWITS, RUFFS AND BLACK TERNS BREEDING ON THE OUSE WASHES. *British Birds* 62(7): 259-270 + 8 pls. July 1969. *WR 137: 77*
[24 Wellington St., Littleport, Ely, Cambridgeshire, England.] The colony of *Limosa limosa* has built up from a single pair in 1952 to no less than 43 pairs in 1969. In addition, *Philomachus pugnax* have nested annually since 1963 and *Chlidonias niger* bred successfully in 1966 and 1969.--From summ.

Davis, Russell S. NORTHERN PRAIRIE HORNED LARKS. *Inland Bird Banding News* 41(4): 145. July-Aug. 1969. *WR 137: 77*
[Clayton, Ill.] Body weights and wing measurements of 18 larks.--Courtesy/ Paul A. Stewart.

Dawkins, Richard, and Monica Impekoven. THE 'PECK/NO-PECK DECISION-MAKER' IN THE BLACK-HEADED GULL CHICK. *Animal Behaviour* 17(2): 243-251, 5 figs. May 1969. *WR 137: 77*
[Univ. Calif., Berkeley.]

Easy, G. M. S., and M. T. Barnes. COMMON SANDPIPER DEVOURED BY COMMON GULL. *Scottish Birds* 5(7): 384, 389. Autumn 1969. *WR 137: 77*

Ennis, T. FIELD-CHARACTERS OF IMMATURE LITTLE GULLS AND KITTIWAKES. *British Birds* 62(6): 234-237. June 1969. *WR 137: 77*
[45 Park Drive, Holywood, Co. Down, England.]

Eriksson, Kalervo. WEIBCHENSCHWARME DES ODINSWASSERTRETERS *(PHALAROPUS LOBATUS)* UND DIE DATIERUNG IHRER GELEGE IN FINNISCH LAPPLAND. [THE FLOCKING OF FEMALE RED-NECKED PHALAROPES *(PHALAROPUS LOBATUS)* AND THE PERIOD OF EGG-LAYING IN FINNISH LAPLAND.] *Ornithol. Mitteil.* 21(8): 157-160, illus. Aug. 1969. In German with English summ. *WR 137: 77*
[Box 10350, Helsinki, Finland.]

Feare, C. J. ARCTIC TERNS FEEDING ON EARTHWORMS. *British Birds* 62(6): 237. June 1969. *WR 137: 77*
[Culterty Field Sta., Newburgh, Aberdeenshire, Scotland.]

Goudy, William H., compiler. WOODCOCK RESEARCH AND MANAGEMENT PROGRAMS, 1967 AND 1968. *US F&WS, Spec. Sci. Rept.--Wildl.* no. 123. iv + 32 p., 3 figs. Apr. 1969. *WR 137: 78*

[W. Va. Dept. Nat. Resources, Morgantown.] Includes the following: *A summary of recent woodcock singing-ground and wing-collection surveys*, Eldon R. Clark; *Woodcock studies in the accelerated program for migratory upland game bird research and management*, Henry M. Reeves; *Local movement of "resident" woodcock in the Canaan Valley of West Virginia*, Robert C. Kletzly and Joseph C. Rieffenberger; *Studies of American woodcock parasite fauna*, Annie K. Prestwood, Gary L. Doster, and Frank A. Hayes; *Homing behavior of displaced male woodcock in Maine*, Sanford D. Schemnitz; and *Woodcock identification (a problem associated with interpreting results of mail questionnaire surveys)*, James M. Ruckel.

Grant, P. R. POLYHEDRAL TERRITORIES OF ANIMALS. *Am. Naturalist* 102: 75-80. 1968. [From Auk 86(3), 1969.] *WR 137: 78*

"Calidris melanotos."

Hausmann, Klaus. BEOBACHTUNGEN AN DER WESTLICHEN HERINGSMÖWE *(LARUS FUSCUS GRAELLSII)* AUF DER INSEL MEMMERT. [OBSERVATIONS OF THE WESTERN LESSER BLACK-BACKED GULL *(LARUS FUSCUS GRAELLSII)* ON MEMMERT ISLAND (NORTH SEA).] *Ornithol. Mitteil.* 21(6): 119-126, illus. June 1969. In German. *WR 137: 78*

Hewson, Raymond. ROOSTS AND ROOSTING HABITS OF THE DIPPER. *Bird Study* 16 (2): 89-100, 2 figs. June 1969. *WR 137: 78*

[Nature Conservancy, Blackhall, Banchory, Kincardinshire, Scotland.] Dippers *(Cinclus cinclus)* roosted in girder spaces beneath metal railway bridges over rivers, preferring roofed cavities to other places, and cavities with less light to those which were lighter. Both males and females maintained the same roosts over long periods, although some dippers would leave during breeding season and return the following winter.--From summ.

Holmes, R. T., and F. A. Pitelka. FOOD OVERLAP AMONG COEXISTING SANDPIPERS ON NORTHERN ALASKAN TUNDRA. *Syst. Zool.* 17: 305-318. 1968. [From Auk 86(3), 1969.] *WR 137: 78*

"Calidris alpina, C. melanotos, C. bairdii, and *C. pusillus."*

Hopkins, Milton N., Jr., and Philip G. Murton. ROOKERY DATA FROM SOUTH GEORGIA. *Oriole* 34(1): 1-11, 1 fig. Mar. 1969. *WR 137: 78*

At least 3,000 pairs of nesting herons and anhingas inhabited the rookeries intensively surveyed in the 500-square mile study area.

Hughes, Maryanne Robinson. IONIC AND OSMOTIC CONCENTRATION OF TEARS OF THE GULL, *LARUS GLAUCESCENS*. *Canadian J. Zool.* 47(6): 1337-1339, 2 figs. Nov. 1969. *WR 137: 78*

[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Impekoven, Monica. MOTIVATIONALLY CONTROLLED STIMULUS PREFERENCES IN CHICKS OF THE BLACK-HEADED GULL *(LARUS RIDIBUNDUS* L.). *Animal Behaviour* 17(2): 252-270, 11 figs. May 1969. *WR 137: 78*

[Rutgers Univ., Newark, N.J.]

Ingolfsson, Agnar. SEXUAL DIMORPHISM OF LARGE GULLS *(LARUS* SPP.). *Auk* 86 (4): 732-737. Oct. 1969. *WR 137: 78*

[Southeastern Mass. Tech. Inst., North Dartmouth.] In several species examined, males had larger bills and shorter wings than females. Bill size could not be correlated with any difference in feeding habits, nor could an explanation be offered for the difference between sexes in winglength.--Courtesy/ Paul A. Stewart.

Jenni, Donald A. A STUDY OF THE ECOLOGY OF FOUR SPECIES OF HERONS DURING THE BREEDING SEASON AT LAKE ALICE, ALACHUA COUNTY, FLORIDA. *Ecol. Monog.* 39(3): 245-270. Summer 1969. *WR 137: 79*
[Univ. Mont., Missoula.] The following items are discussed: winter status in Florida, spring arrival, onset of breeding, nest site, nest construction, egg laying, clutch size, incubation, mortality of eggs and young, hatching, food, feeding behavior, the significance of asynchronous hatching, pellets, location of heronries, and cattle egret symbiosis.--Courtesy/ Paul A. Stewart.

Johns, J. E. FIELD STUDIES OF WILSON'S PHALAROPE. *Auk* 86(4): 660-670, 4 figs. Oct. 1969. *WR 137: 79*
[E. Wash. State Coll., Cheney.] The following are considered: mating relationship, courtship behavior, feeding habits, laying, incubation, parental care, and late summer behavior of Wilson's phalarope *(Steganopus tricolor)*.--Courtesy/ Paul A. Stewart.

Kadlec, John A., and William H. Drury, Jr. LOSS OF BANDS FROM ADULT HERRING GULLS. *Bird-Banding* 40(3): 216-221. July 1969. *WR 137: 79*
[Univ. Mich., Ann Arbor.] Band loss for herring gulls is estimated to be 45% by the third year.--Courtesy/ Paul A. Stewart.

Kadlec, John A., William H. Drury, Jr., and Daniel K. Onion. GROWTH AND MORTALITY OF HERRING GULL CHICKS. *Bird-Banding* 40(3): 222-233. July 1969. *WR 137: 79*
[Univ. Mich., Ann Arbor.] About half of the herring gull *(Larus argentatus)* chicks died before fledging, mostly during the first five days after hatching. A large proportion of the chicks which died disappeared, and no definite cause for their disappearance could be established.--From summ. Courtesy/ Paul A. Stewart.

Lambert, K. BEOBACHTUNGEN ZUM ZUG UND WINTERQUARTIER DER SCHWALBENMÖWE *(XEMA SABINI)* IM ÖSTLICHEN ATLANTIK. [OBSERVATIONS UPON THE MIGRATION AND WINTERING AREA OF SABINE'S GULL *(XEMA SABINI)* IN THE EASTERN ATLANTIC.] *Vogelwarte* 24: 99-106. 1967. [From Auk 86(4), 1969. In German with English summ.] *WR 137: 79*

Makatsch, Wolfgang. STUDIES OF LESS FAMILIAR BIRDS / 154 AUDOUIN'S GULLS. *British Birds* 62(6): 230-232 + 4 pls. June 1969. *WR 137: 79*
[Martin-Hoop-Strasse 43, Bautzen, Germany.] Observations of nesting colony.

Oatley, T. B. UNUSUAL BREEDING BEHAVIOUR OF BLUE CRANES, *TETRAPTERYX PARADISEA*. *Lammergeyer* no. 10. p. 87-88. June 1969. *WR 137: 79*
The cranes were reported to "carry" their chicks from the island nesting site to the mainland. The two chicks were observed swimming the 100-yard stretch of water with their parents.

Oswald, William Patrick. DETERMINATION OF THE SEXES OF THE COMMON SNIPE, *CAPELLA GALLINAGO DELICATA* (ORD), USING ONLY EXTERNAL FEATURES OF THIS BIRD. *M.S. thesis, Mich. Tech. Univ.* 48 p. 1969. *WR 137: 79*
Courtesy/ Norman F. Sloan.

Parrinder, E. R., and E. D. Parrinder. LITTLE RINGED PLOVERS IN BRITAIN IN 1963-67. *British Birds* 62(6): 219-223. June 1969. *WR 137: 79*
[Trewent, 91 Weald Rd., Sevenoaks, Kent, England.] In 1967 about 230 pairs summered in England, an increase of 46% since 1962.--From summ.

Parrinder, Eileen D. LITTLE RINGED AND RINGED PLOVERS LAYING IN THE SAME NEST. *British Birds* 62(6): 233. June 1969. *WR 137: 79*
[Trewent, 91 Weald Rd., Sevenoaks, Kent, England.]

Recher, Harry F., and Judy A. Recher. COMPARATIVE FORAGING EFFICIENCY OF ADULT AND IMMATURE LITTLE BLUE HERONS *(FLORIDA CAERULEA)*. *Animal Behaviour* 17 (2): 320-322. May 1969. *WR 137: 80*

[Australian Mus., Sydney, Australia.] Summary: Juvenile little blue herons *(Florida caerulea)* miss prey more frequently and capture less food per minute foraging than do adults. The inefficiency of juveniles in capturing prey is an adequate explanation for the deferment of reproduction beyond the time when the birds might first be expected to breed.

Secker, H. L. PROCELLARIFORMES IN COOK STRAIT, NEW ZEALAND. *Emu* 69(3): 155-160, 1 fig. Oct. 1969. *WR 137: 80*

[14 Llyma Street, Upper Hutt, New Zealand.]

Shields, Robert H., and Earl L. Benham. FARM CROPS AS FOOD SUPPLEMENTS FOR WHOOPING CRANES. *J. Wildl. Mgmt.* 33(4): 811-817, 1 fig. Oct. 1969. *WR 137: 80*

[Bur. Sport Fisheries & Wildl., Portland, Oreg.] Abstract: Two 97-acre experimental fenced fields were developed on the Aransas National Wildlife Refuge, Texas, for supplemental feeding of whooping cranes *(Grus americana)* during the winters of 1964-65 through 1967-68. Inclement weather during the 1964-65 period altered the cranes' normal feeding behavior on coastal flats and resulted in use of the special food plots and consumption of such foods as seedheads of hegari *(Sorghum vulgare)*, kernels of corn, and the green shoots of wheat. The winter weather of 1965-66 was more favorable, and cranes showed preference for the natural feeding areas of the coastal tidelands and made little use of the special food plots. Moderate consumption of farm crops by whooping cranes occurred in the 1966-67 winter. Hurricane Beulah struck the Texas Coast during September, 1967, and invalidated data for the 1967-68 period. Sandhill cranes *(G. canadensis)* and Canada geese *(Branta canadensis)* were attracted to and made use of the supplemental food crops. Observed waterfowl food preferences included cereal crops such as wheat, corn, milo *(S. vulgare)*, and legumes, plus peanuts *(Arachis hypogaea)* and field peas *(Vigna sinensis)*. Milo, corn, field peas, and peanuts were provided primarily for whooping cranes, while wheat browse served to attract sandhill cranes and Canada geese away from those crops raised for the whooping cranes.

Short, Lester L. AN APPARENT AGONISTIC DISPLAY OF THE WHISTLING HERON *(SYRIGMA SIBILATRIX)*. *Wilson Bull.* 81(3): 330-331. Sept. 1969. *WR 137: 80*

[Am. Mus. Nat. Hist., New York, N.Y.] Courtesy/ Paul A. Stewart.

Stafford, J. THE CENSUS OF HERONRIES, 1962-63. *Bird Study* 16(2): 83-88. June 1969. *WR 137: 80*

[Westering, Moore Lane, Brightstone, Isle of Wight, England.] The population of *Ardea cinerea* in the British Isles decreased by about 41% from 1962 to 1963, and about 55% from 1954 to 1963. Severe winters and toxic chemicals have affected the population.--From summ.

Tewnion, Alex. DOTTEREL NOTES FROM THE CAIRNGORMS. *Scottish Birds* 5(7): 381-384 + 1 pl. Autumn 1969. *WR 137: 80*

Incubation period for a four-egg clutch was 24 days or less.

Thomas, D. G. BREEDING BIOLOGY OF THE AUSTRALIAN SPUR-WINGED PLOVER. *Emu* 69 (2): 81-102, 7 figs. Aug. 1969. *WR 137: 80*

[9 Lallaby Rd., Moonah, Tasmania.] *"Lobibyx novaehollandiae."*

Tree, A. J. THE STATUS OF ETHIOPIAN WADERS IN ZAMBIA. *Puku* no. 5. p. 181-205, 22 figs. 1969. *WR 137: 80*

[P.O. Box 2125, Windhoek, South West Africa.] The status of certain wading birds, and the skimmer *(Rhynchops flavirostris)*, all of which breed in Zambia is discussed. Breeding is confined to the dry season, April to October, the only exception being a breeding record of *Rostratula benghalensis* in February.--From summ.

Vernon, J. D. R. SPRING MIGRATION OF THE COMMON GULL IN BRITAIN AND IRELAND. *Bird Study* 16(2): 101-107, 1 fig. June 1969. *WR 137: 81*
[31 Kentings, Comberton, Cambridge, England.] A summary of visual and radar observations of *Larus canus* migration through Britain and Ireland.

Wallace, D. I. M. OBSERVATIONS ON AUDOUIN'S GULLS IN MAJORCA. *British Birds* 62(6): 223-229 + 1 pl. June 1969. *WR 137: 81*
[c/o Nigerian Breweries, P.O. Box 545, Lagos, Nigeria.] Notes on field identification and feeding behavior.

Wilbur, Henry M. THE BREEDING BIOLOGY OF LEACH'S PETREL, *OCEANODROMA LEUCORHOA*. *Auk* 86(3): 433-442. July 1969. *WR 137: 81*
[Univ. Mich., Ann Arbor.] Approximately 15,000 pairs of Leach's petrels nest on Kent Island each year. Of adults nesting in 1965, 54% returned in 1966; 67% of the returned petrels nested with their previous mates; 68% of the returned petrels nested in their previous burrows. The nesting success was more than 98% through the first few weeks after hatching. The young visit the colony during their first and second summers, but breeding is delayed until age 3 years. Failed breeders and widowed birds frequently remate and attempt to renest later in the season.--From summ. Courtesy/ Paul A. Stewart.

HAWKS & OWLS

Bashenina, N. V. [GEOGRAPHICAL VARIABILITY OF RAPTORS AND THEIR FOOD.] *Ornitologiya* 9: 49-57. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 81*

Bochenski, Zygmunt. PRZYCZNEK DO ZNAJOMOSCI POKARMU PUCHACZY Z PIENIN. [CONTRIBUTION TO THE KNOWLEDGE OF THE DIET OF THE EAGLE OWL IN THE PIENINY MTS.] *Przegl. Zool.* 10(1): 64-65. 1966. [From Biol. Abstr. 50(18), 1969. In Polish with English summ.] *WR 137: 81*
[Zakl. Zool. Syst. Polish Acad. Sci., Cracow, Poland.]

Campbell, John M. THE OWLS OF THE CENTRAL BROOKS RANGE, ALASKA. *Auk* 86(3): 565-568. July 1969. *WR 137: 81*
[Univ. N. Mex., Albuquerque.] Reports feeding on the tundra during the 24-hour continuous daylight between May and August by great horned owls *(Bubo virginianus)*, snowy owls *(Nyctea scandiaca)*, hawk owls *(Surnia ulula)*, great gray owls *(Strix nebulosa)*, short-eared owls *(Asio flammeus)*, and boreal owls *(Aegolius funereus)*.

Campbell, R. Wayne. BALD EAGLE SWIMMING IN OCEAN WITH PREY. *Auk* 86(3): 561. July 1969. *WR 137: 81*
[5536 Hardwick St., Burnaby 2, British Columbia, Canada.] The prey was an adult pelagic cormorant *(Phalacrocorax pelagicus)*.--Courtesy/ Paul A. Stewart.

Eaton, S. W., and J. A. Grzybowski. FOOD HABITS OF OWLS ON THE NIAGARA FRONTIER. *Kingbird* 19(3): 135-138, 1 fig. July 1969. *WR 137: 81*
[St. Bonaventure Univ., St. Bonaventure, N.Y.] Of 570 individual mammals identified in pellets from the 8 spp. of owls, 455 or 80% were *Microtus pennsylvanicus*.

Franks, Edwin C., and John E. Warnock. GREAT HORNED OWL NESTING IN A POPULATED AREA. *Wilson Bull.* 81(3): 332-333, 1 fig. Sept. 1969. *WR 137: 81*
[Western Ill. Univ., Macomb.] The nest of a great horned owl *(Bubo virginianus)* was 38 ft above the ground in a *Larix decidua* on a college campus.--Courtesy/ Paul A. Stewart.

Glue, D. E. PERCH AND ROACH AS PREY OF TAWNY OWL. *British Birds* 62(6): 237. June 1969. *WR 137: 81*
[British Trust for Ornithol., Beech Grove, Tring, Hertfordshire, England.] *"Strix aluco."*

Grier, James W. BALD EAGLE BEHAVIOR AND PRODUCTIVITY RESPONSES TO CLIMBING TO NESTS. *J. Wildl. Mgmt.* 33(4): 961-966, 1 fig. Oct. 1969. *WR 137: 82*
[Cornell Univ., Ithaca, N.Y.]

König, C. LAUTÄUSSERUNGEN VON RAUHFUSSKAUZ *(AEGOLIUS FUNEREUS)* UND SPERLINGSKAUZ *(GLAUCIDIUM PASSERINUM)*. [VOCALIZATIONS OF TENGMALM'S OWL *(AEGOLIUS FUNEREUS)* AND THE PYGMY OWL *(GLAUCIDIUM PASSERINUM)*.] *Vogelwelt* (suppl. 1): 115-138. 1968. [From Auk 86(3), 1969. In German.] *WR 137: 82*

Ligon, J. David. SOME ASPECTS OF TEMPERATURE RELATIONS IN SMALL OWLS. *Auk* 86(3): 458-472, 6 figs. July 1969. *WR 137: 82*
[Univ. N. Mex., Albuquerque.] The following subjects were considered: oxygen consumption, body temperature, evaporative water loss, responses to rising ambient temperatures, upper lethal body temperatures, attempts to induce torpor, standard rates of metabolism, insulation, effectiveness of evaporative cooling, and responses to shortage of food.--Courtesy/ Paul A. Stewart.

Mathisen, John E. BALD EAGLE-OSPREY STATUS REPORT, 1969. *Loon* 41(3): 84-87, [1 fig.]. Sept. 1969. *WR 137: 82*
[Cass Lake, Minn.] Nesting populations on the Chippewa National Forest were surveyed for the seventh consecutive year. Bald eagles produced 1.5 young per nest; ospreys, 1.7 young per nest.

Meyburg, Berndt-Ulrich. BEOBACHTUNGEN AM HORST DES STEINADLERS *(AQUILA CHRYSAËTOS)*. [OBSERVATIONS AT A GOLDEN EAGLES EYRIE.] *Ornithol. Mitteil.* 21 (6): 113-119, illus. June 1969. In German with English summ. *WR 137: 82*
[Herbertstrasse 14, Berlin, Germany.]

Mikkola, Heimo. LAPINPÖLLÖ *(STRIX NEBULOSA)* PESINYT MAASSA. [ON THE NEST-SITES OF THE GREAT GREY OWL *(STRIX NEBULOSA)*.] *Ornis Fenn.* 46(3): 141. 1969. In Finnish with English summ. *WR 137: 82*

Mikkola, Heimo, and Seppo Sulkava. ON THE OCCURRENCE OF THE GREAT GREY OWL *(STRIX NEBULOSA)* IN FINLAND 1955-68. *Ornis Fenn.* 46(3): 126-131, 1 fig. 1969. In English with Finnish summ. *WR 137: 82*
[Univ. Oulu, Oulu, Finland.]

Mollen, Gunstein Uleberg. HEKKING AV JAKTFALK SOMMEREN 1966. [NESTING BY THE HUNTING FALCON DURING THE SUMMER 1966.] *Sterna* 8(1): 43-47, illus. 1968. [From Biol. Abstr. 50(24), 1969. In Norwegian.] *WR 137: 82*
"Falco rusticolus."

Mote, William R. TURKEY VULTURES LAND ON VESSEL IN FOG. *Auk* 86(4): 766-767, 1 fig. Oct. 1969. *WR 137: 82*
About 50 turkey vultures *(Cathartes aura)* came through the dense fog and attempted to land on the ship, about 8 miles from the nearest land.--Courtesy/ Paul A. Stewart.

Murphy, Joseph R., Franz J. Camenzind, Dwight G. Smith, and J. Bradford Weston. NESTING ECOLOGY OF RAPTORIAL BIRDS IN CENTRAL UTAH. *Brigham Young Univ. Sci. Bull., Biol. Ser.* 10(4). ii + 36 p., 12 figs. Oct. 1969. *WR 137: 82*
Includes the following: An introduction to nesting ecology of raptorial birds in Central Utah, Joseph R. Murphy; Nesting ecology and behavior of the golden eagle *Aquila chryseatos* L., Franz J. Camenzind; Nesting ecology of the great horned owl *Bubo virginianus*, Dwight G. Smith; and Nesting ecology of the ferruginous hawk *Buteo regalis*, John Bradford Weston.

Nero, Robert W. THE STATUS OF THE GREAT GRAY OWL IN MANITOBA, WITH SPECIAL REFERENCE TO THE 1968-69 INFLUX. *Blue Jay* 27(4): 191-209, [11] figs. Dec. 1969. *WR 137: 82*
[Manitoba Mus. Man & Nature, Winnipeg, Manitoba, Canada.] Twenty-four specimens were collected and 128 sightings were made during October 4, 1968 through May 17, 1969. The large numbers of owls were sighted in a relatively small portion of southeastern Manitoba.

Piechocki, R. DIE GROSSGEFIEDER-MAUSER DES STEINKAUZES *(ATHENE NOCTUA).* [THE FLIGHT FEATHERS OF THE LITTLE OWL *(ATHENE NOCTUA).*] *J. Ornithol.* 109: 30-36. 1968. [From Auk 86(4), 1969. In German.] *WR 137: 83*

Redhead, R. E. AN ANALYSIS OF PELLETS CAST BY HARRIER HAWKS. *Notornis* 15 (4): 244-247. Dec. 1968. [From J. Mammal. 50(4), 1969.] *WR 137: 83*

Ross, Anthony. ECOLOGICAL ASPECTS OF THE FOOD HABITS OF INSECTIVOROUS SCREECH-OWLS. *Proc. Western Foundation Vertebrate Zool.* 1(6): 301-344, 17 figs. + frontispiece. Aug. 1969. Price $2.00 from Western Foundation Vertebrate Zoology, 1100 Glendon Ave., Los Angeles, California 90024. *WR 137: 83*

Detailed observations on the food habits of three western American species of insectivorous owls *(Otus asio, O. trichopsis,* and *O. flammeolus)* are reported in this study. The types of prey taken as food by these birds were determined through analysis of the contents of 185 digestive tracts collected in Arizona, California, Colorado, New Mexico, Oregon, Texas, Washington, and México.--From summ. and concl.

Schnell, Gary D. COMMUNAL ROOSTS OF WINTERING ROUGH-LEGGED HAWKS *(BUTEO LAGOPUS).* *Auk* 86(4): 682-690, 2 figs. Oct. 1969. *WR 137: 83*

[Box 7366, Univ. Sta., Austin, Texas.] As many as 15 rough-legged hawks simultaneously used the same roosting site. The hawks went to roost progressively later as the time of sunset became later. In the morning the hawks left the roosting site when the light intensity was low or less than 4 ft-c. Coniferous trees were favored for roosting sites.--Courtesy/ Paul A. Stewart.

Shields, Mary. ACTIVITY CYCLES OF SNOWY OWLS AT BARROW, ALASKA. *Murrelet* 50(2): 13-16, 2 figs. May-Aug. 1969. *WR 137: 83*

[Mile 276 Alaska Railroad, Chulitna, Alaska.] The captive *Nyctea scandiaca* were found to be on a definite activity cycle, being most active from 9 p.m. to 8 a.m., while tundra owls were found more active during the entire 24-hour period. --From summ.

Sibley, Fred C., Robert D. Mallette, John C. Borneman, and Raymond S. Dalen. CALIFORNIA CONDOR SURVEYS, 1968. *Calif. Fish & Game* 55(4): 298-306, 2 figs. Oct. 1969. *WR 137: 83*

Sightings during 16-17 Oct. 1968 were reduced to minimum counts of 33 and 52 individual birds, respectively, for the 2-day survey. An experimental baiting program utilizing deer carcasses was initiated and evaluated.--From abstr.

Skutch, Alexander F. NOTES ON THE POSSIBLE MIGRATION AND THE NESTING OF THE BLACK VULTURE IN CENTRAL AMERICA. *Auk* 86(4): 726-731. Oct. 1969. *WR 137: 83*

[El Quizarrá, San Isidro del General, Costa Rica.] Many thousands of black vultures *(Coragyps atratus)* were observed flying southward, during the period from early September to early December, indicating southward migration. However, no northward movements of comparable magnitude were observed. In Central America, the black vulture breeds chiefly in the drier months early in the year.-- Courtesy/ Paul A. Stewart.

Tyler, Herb, and Phil Saetvelt. THE ECOLOGY OF THE GREAT HORNED OWL AND THE RED-TAILED HAWK. *S. Dak. Bird Notes* 21(4): 77-84, 96, 7 [figs.]. Dec. 1969. *WR 137: 83*

[Sheboygan, Wis.] Observations of four red-tailed hawk nests and three great horned owl nests between Feb. 14 and May 25, 1969.

Voelker, Theodore. MATING BEHAVIOR OF RED-TAILED HAWKS. *Loon* 41(3): 90-91. Sept. 1969. *WR 137: 83*

[St. Mary's Coll., Winona, Minn.] Description of aerial display.

Weber, Bruno. VERLUSTE BEI EULEN UND GREIFVÖGELN IM WINTER 1969. [LOSSES OF HAWKS AND OWLS DURING WINTER 1969.] *Ornithol. Mitteil.* 21(8): 164. Aug. 1969. In German. *WR 137: 83*

"Tyto alba, Asio otus, Strix aluco, Buteo buteo and *Falco tinnunculus."*

HAWKS & OWLS--Continued

White, Clayton M. FUNCTIONAL GONADS IN PEREGRINES. *Wilson Bull.* 81(3): 339-340. Sept. 1969. *WR 137: 84*
[Cornell Univ., Ithaca, N.Y.] Of 17 female peregrines *(Falco peregrinus)*, 4 had double ovaries.--Courtesy/ Paul A. Stewart.

Willgohs, J. F. BEDRE VERN AV VARE ROVFUGLER. [BETTER PROTECTION FOR OUR BIRDS OF PREY.] *Sterna* 8(1): 1-14, illus. 1968. [From Biol. Abstr. 50(22), 1969. In Norwegian.] *WR 137: 84*

Yrsaliev, D. [INFORMATION ON THE PREDACEOUS BIRDS OF KIRGIZIA.] *Trudy Kirg. Univ. Ser. Biol. Nauk.* p. 68-76. 1967. [From Biol. Abstr. 50(20), 1969. In Russian.] *WR 137: 84*

BLACKBIRDS, STARLINGS, CROWS

Baptista, Luis F. AN UNUSUAL NEST SITE OF THE STARLING. *Wilson Bull.* 81(3): 335-336. Sept. 1969. *WR 137: 84*
[Univ. Calif., Berkeley.] The nest of a starling *(Sturnus vulgaris)* was at the bottom of a pipe 35 ft high and serving as a vent for two gas heaters.--Courtesy/ Paul A. Stewart.

Bohnsack, Burkhard. ÜBER DEN TAGESRHYTHMUS DES STAREN *(STURNUS VULGARIS)* AM SCHLAFPLATZ. [DIURNAL ROOSTING HABITS OF STARLINGS *(STURNUS VULGARIS)*.] *Oecologia* (Berlin) 1(4): 369-376, illus. 1968. [From Biol. Abstr. 50(18), 1969. In German with English summ.] *WR 137: 84*
[Zool. Inst. Univ. Kiel, Kiel, Germany.]

Burtt, Harold E., and Maurice L. Giltz. A STATISTICAL ANALYSIS OF BLACKBIRD *(MOLOTHRUS ATER ATER, QUISCALUS QUISCALA VERSICOLOR, STURNUS VULGARIS VULGARIS, AGELAIUS PHOENICEUS PHOENICEUS)* AGGRESSIVENESS. *Ohio J. Sci.* 69(1): 58-62. 1969. [From Biol. Abstr. 50(22), 1969.] *WR 137: 84*
[Ohio State Univ., Columbus.]

Carr, Douglas. MAGPIE PREYING ON SNAKE. *British Birds* 62(6): 238. June 1969. *WR 137: 84*
[27 Monks Rd., Virginia Water, Surrey, England.]

De Grazio, John W., Jerome F. Besser, and Joseph L. Guarino. WINTER DISTRIBUTION OF BLACKBIRDS AS RELATED TO CORN DAMAGE CONTROL IN BROWN COUNTY, SOUTH DAKOTA. *Trans. 34th N. Am. Wildl. & Nat. Resources Conf.* p. 131-136, 1 fig. 1969. *WR 137: 84*
[Denver Wildl. Res. Center, Denver, Colo.] Conclusions: Analysis of banding data show that blackbirds responsible for damage to ripening corn in Brown County, South Dakota, are widely dispersed during the winter and that many occur in unreported roosts. Thus, from these preliminary data, it appears that damage control by treatment of distant winter roosts would be difficult and that the most practical solution to the problem is to concentrate on protection of the cornfields at the damage site.

De Grazio, John W., Jerome F. Besser, Joseph L. Guarino, Charles M. Loveless, and John L. Oldemeyer. A METHOD FOR APPRAISING BLACKBIRD DAMAGE TO CORN. *J. Wildl. Mgmt.* 33(4): 988-994. Oct. 1969. *WR 137: 84*
[Denver Wildl. Res. Center, Denver, Colo.]

Doichev, R. L. [A STUDY ON THE FOOD OF THE STARLING *(STURNUS VULGARIS* L.*)* IN THE SOFIA REGION.] *God. Sofiiskiya Univ. Biol. Fak. Kn. 1 Zool. Biokhim. Zhivotn.* 61: 49-62, illus. 1966/1967. [From Biol. Abstr. 50(23), 1969. In Bulgarian with English summ.] *WR 137: 84*

Downing, Paul, and Eleanor Downing. GRACKLES "ANTING" WITH BLACK WALNUTS. *Inland Bird Banding News* 41(4): 146. July-Aug. 1969. *WR 137: 85*
[240 Sard Place, Highwood, Ill.] Courtesy/ Paul A. Stewart.

Erpino, Michael J. SEASONAL CYCLE OF REPRODUCTIVE PHYSIOLOGY IN THE BLACK-BILLED MAGPIE. *Condor* 71(3): 267-279, 5 figs. July 1969. *WR 137: 85*
[Chico State Coll., Chico, Calif.] Physiology of the gonadal cycles of *Pica pica.*

Goddard, Stephen V. FALL AND WINTER FOOD HABITS OF RED-WINGED BLACKBIRDS AND BROWN-HEADED COWBIRDS IN WESTERN OKLAHOMA. *Wilson Bull.* 81(3): 336-337. Sept. 1969. *WR 137: 85*
[Wis. State Univ., River Falls.] The use of the grain sorghum *(Sorghum vulgare)* by red-winged blackbirds *(Agelaius phoeniceus)* and brown-headed cowbirds *(Molothrus ater)* around the Washita National Wildlife Refuge may have caused reduced usage of the refuge by waterfowl.--Courtesy/ Paul A. Stewart.

Hays, Helen. DIFFERENTIAL SURVIVAL AMONG NESTLING REDWINGED BLACKBIRDS AFTER A STORM. *Auk* 86(3): 563-564. July 1969. *WR 137: 85*
[14 East 95th St., New York, N.Y.] All of the nestlings of *Agelaius phoeniceus* hatched just before or during the storm survived; none of those 2-6 days old during the storm survived.--Courtesy/ Paul A. Stewart.

Hendricks, L. D., R. Harkema, and G. C. Miller. HELMINTHS OF THE CROW *CORVUS BRACHYRHYNCHOS* BREHM, 1822, IN NORTH CAROLINA. *Proc. Helminthol. Soc. Washington* 36: 150-152. 1969. [From Auk 86(4), 1969.] *WR 137: 85*

Holcomb, L. C., and G. Twiest. RED-WINGED BLACKBIRD NESTLING GROWTH COMPARED TO ADULT SIZE AND DIFFERENTIAL DEVELOPMENT OF STRUCTURES. *Ohio J. Sci.* 68: 277-284. 1968. [From Auk 86(4), 1969.] *WR 137: 85*

Hosono, Tetsuo. [A STUDY OF THE LIFE HISTORY OF BLUE MAGPIE 5. ROOST AND ROOST-FLOCK DISTRIBUTION IN WINTER.] *Misc. Repts. Yamashina's Inst. Ornithol. Zool.* 5(3): 278-286, illus. 1968. [From Biol. Abstr. 50(17), 1969.] *WR 137: 85*
[16-996 Yodogabashi, Nagano City, Japan.]

Lewies, R. W., and M. I. Dyer. RESPIRATORY METABOLISM OF THE RED-WINGED BLACKBIRD IN RELATION TO AMBIENT TEMPERATURE. *Condor* 71(3): 291-298, 6 figs. July 1969. *WR 137: 85*
[Dept. Lands & Forests, Lindsay, Ontario, Canada.] A curvilinear relationship between metabolism and ambient temperature was found for daytime conditions but the nighttime results showed a linear relationship. In addition, significant differences were found between daytime and nighttime standard metabolic rates. Respiratory quotient values were lower for males than for females. This difference suggests that there was a slightly different metabolic substrate being utilized by the two sexes.--From summ. Courtesy/ Paul A. Stewart.

Mahringer, Eric B. THE POPULATION DYNAMICS OF THE COMMON RAVEN *(CORVUS CORAX PRINCIPALIS* RIDGWAY) ON THE BARAGA PLAINS, L'ANSE, MICHIGAN. *M.S. thesis, Mich. Tech. Univ.* 1970. *WR 137: 85*
Courtesy/ Norman F. Sloan.

Miller, Robert L. STARLINGS BRED IN CAPTIVITY. *Auk* 86(4): 763-764. Oct. 1969. *WR 137: 85*
[Wildl. Res. Lab., Delmar, N.Y.] The starlings *(Sturnus vulgaris)* were confined in a cage 8' X 6' X 6'.--Courtesy/ Paul A. Stewart.

Payne, Robert B. GIANT COWBIRD SOLICITS PREENING FROM MAN. *Auk* 86(4): 751-752, 1 fig. Oct. 1969. *WR 137: 85*
[Univ. Okla., Norman.] Observations on a caged *Psomocolax oryzivorus.*--Courtesy/ Paul A. Stewart.

Ramsey, Jed J. OBSERVATIONS ON THE HABITS OF NEST CARE IN THE RED-WINGED BLACKBIRD. *Bull. Texas Ornithol. Soc.* 2(2): 24-27, 1 fig. Apr.-June 1968. *WR 137: 86*
[Lamar State Coll. Technol., Beaumont, Texas.] Tabulated events during 11 hrs of observation from June 13 through June 23, 1968.

Rea, A. M. AGE DETERMINATION OF CORVIDAE, PART 1: COMMON CROW. *Western Bird Bander* 42: 44-45. 1967. [From Auk 86(4), 1969.] *WR 137: 86*

Rea, A. M., and D. Kanteena. AGE DETERMINATION OF CORVIDAE, PART 2: COMMON AND WHITE-NECKED RAVENS. *Western Bird Bander* 43: 6-9. 1968. [From Auk 86(4), 1969.] *WR 137: 86*

Rosenberg, Neils Thomas. BETRAGTNINGER OM OVERVINTRENDE STAERE *(STURNUS VULGARIS)* BELYST GENNEM UNDERSOGELSER PA EN OVERNATNINGSPLADS. [CONSIDERATIONS ON WINTERING STARLINGS *(STURNUS VULGARIS)* BASED ON INVESTIGATIONS AT A ROOST.] *Dansk Ornithol. Foren. Tidsskr.* 62(3/4): 173-187, illus. 1969. [From Biol. Abstr. 50(23), 1969. In Danish with English summ.] *WR 137: 86*
[Helmsvej 22, Bagsvaerd, Denmark.]

Saiza, A. AGE DETERMINATION OF CORVIDAE, PART 3. JUVENALS. *Western Bird Bander* 43: 20-23. 1968. [From Auk 86(4), 1969.] *WR 137: 86*
"Common crow and white-necked raven."

Sen Gupta, S. N. THE INDIAN HOUSE CROW ATTACKS A FIVE-STRIPED SQUIRREL. *Auk* 86(3): 556. July 1969. *WR 137: 86*
[Univ. Calcutta, Calcutta, India.] The house crow *(Corvus splendens)* is omnivorous and was presumably attempting to catch the squirrel for food.--Courtesy/ Paul A. Stewart.

Warren, R. B. CARRION CROW TAKING STARLING IN THE AIR. *British Birds* 62(6): 237-238. June 1969. *WR 137: 86*
[35 Athelstan Road, Harold Wood, Romford, Essex, England.]

OTHER BIRDS

Alsop, Fred J. III. BARN SWALLOWS NESTING IN THE GREAT SMOKY MOUNTAINS NATIONAL PARK. *Migrant* 40(3): 66-67. Sept. 1969. *WR 137: 86*
[Univ. Tenn., Knoxville.]

Berger, Andrew J. THE NEST, EGGS, AND YOUNG OF THE ELEPAIO. *Wilson Bull.* 81 (3): 333-335, 3 figs. Sept. 1969. *WR 137: 86*
[Univ. Hawaii, Honolulu.] Note contains three photographs of the nest including eggs and young of the elepaio *(Chasiempis sandwichensis).*--Courtesy/ Paul A. Stewart.

Borowski, Stanislaw. O POKARMIE JEMIOLUSZKI, *BOMBYCILLA GARRULUS* L. [ON THE FOOD OF THE BOHEMIAN WAXWING, *BOMBYCILLA GARRULUS* L.] *Przegl. Zool.* 10(1): 62-64, illus. 1966. [From Biol. Abstr. 50(18), 1969. In Polish with English summ.] *WR 137: 86*
[Zakl. Badania Ssakow, Polish Akad. Sci., Białowieża, Poland.]

Brackbill, Hervey. A CARDINAL "DIVORCE." *Bird-Banding* 40(3): 255. July 1969. *WR 137: 86*
[2620 Poplar Dr., Baltimore, Md.] The color-banded male paired with another female after a year's association with a color-banded female.--Courtesy/ Paul A. Stewart.

Broekhuysen, G. J., and J. M. Winterbottom. BREEDING ACTIVITY OF THE CAPE WHITE-EYE *ZOSTEROPS VIRENS CAPENSIS* SUNDEVALL IN THE SOUTHWEST CAPE. *Ostrich* 39: 163-176. 1968. [From Bird-Banding 40(4), 1969.] *WR 137: 86*

Dennis, John V. THE YELLOW-SHAFTED FLICKER *(COLAPTES AURATUS)* ON NANTUCKET ISLAND, MASSACHUSETTS. *Bird-Banding* 40(4): 290-308, 2 figs. Oct. 1969. *WR 137: 87*
[Box 389, Leesburg, Va.] The yellow-shafted flicker has become an abundant nesting bird on the island, with about one pair per square mile of land area. Nineteen pairs per 100 acres were found in white pine forest, and nests were separated by as little as 22 feet. Nesting success was as high as 100%. The average height of 169 nests was 4 feet 4 inches, and one nest was found in a ground cavity.--Courtesy/ Paul A. Stewart.

Derim-Oglu, E. N. [OBSERVATIONS AND EXPERIMENTS ON THE BLACK-CAPPED CHICKADEE IN THE NESTING SEASON.] *Ornitologiya* 9: 88-94. 1968. [From Bird-Banding 40(3), 1969. In Russian.] *WR 137: 87*
"Parus atricapillus."

Eriksson, Kalervo. ON THE OCCURRENCE OF THE GRASSHOPPER WARBLER *(LOCUSTELLA NAEVIA)* AND RIVER WARBLER *(L. FLUVIATILIS)* IN FINLAND RELATED TO THE BIRD WATCHING ACTIVITY. *Ornis Fenn.* 46(3): 113-125, 9 figs. 1969. In English with Finnish summ. *WR 137: 87*
[Box 10350, Helsinki, Finland.]

Eriksson, Kalervo. ÜBER DIE BRUTÖKOLOGIE DES BUSCHROHRSÄNGERS *(ACROCEPHALUS DUMETORUM).* [ON THE BREEDING ECOLOGY OF BLYTH'S REED WARBLER *(ACROCEPHALUS DUMETORUM).*] *Ornithol. Mitteil.* 21(5): 91-100, 5 figs. May 1969. In German with English summ. *WR 137: 87*
[Box 10350, Helsinki, Finland.] Based on 520 hours observation of four nests during 1964-66.

Evans, Roger M. SPECIFIC GRAVITY OF WHITE PELICAN EGGS. *Auk* 86(3): 560-561. July 1969. *WR 137: 87*
[Univ. Manitoba, Winnipeg, Manitoba, Canada.] Courtesy/ Paul A. Stewart.

Goodliffe, V. H. ROBIN APPARENTLY ANTING WHILE HOLDING WORM-LIKE CREATURES. *British Birds* 62(7): 284. July 1969. *WR 137: 87*
[Landour, High St., Brading, Isle of Wight, England.]

Gorski, Leon J. TRAILL'S FLYCATCHERS OF THE "FITZ-BEW" SONGFORM WINTERING IN PANAMA. *Auk* 86(4): 745-747. Oct. 1969. *WR 137: 87*
[Central Conn. State Coll., New Britain.] Tape-recorded songs of the Traill's flycatcher *(Empidonax traillii)* were played in suitable habitat in Panama to determine whether these birds were present and to study their territorial behavior. Birds having the "fitz-bew" song form were thus found to occur in the area.--Courtesy/ Paul A. Stewart.

Hancock, Mary. HOUSE MARTINS MATING ON THE WING. *British Birds* 62(7): 285. July 1969. *WR 137: 87*
[7 Park Terrace, New Earswick, York, England.]

Harrison, C. J. O. A RECONSIDERATION OF HORSFIELD BRONZE CUCKOO DEPOSITING ITS EGGS BY USING THE BILL. *Emu* 69(3): 178-181. Oct. 1969. *WR 137: 87*
[14 Dawlish Ave., Perivale, Middlesex, England.]

Hildén, Olav. ÜBER VORKOMMEN UND BRUTBIOLOGIE DES BIRKENZEISIGS *(CARDUELIS FLAMMEA)* IN FINNISCH-LAPPLAND IM SOMMER 1968. [THE OCCURRENCE AND BREEDING HABITS OF THE REDPOLL IN NORTHERN LAPLAND 1968.] *Ornis Fenn.* 46(3): 93-112, 3 figs. 1969. In German with Finnish and English summ. *WR 137: 87*
[Långvik, Jorvas, Finland.]

Hirth, David H., Albert E. Hester, and Frederick Greeley. DISPERSAL AND FLOCKING OF MARKED YOUNG ROBINS *(TURDUS M. MIGRATORIUS)* AFTER FLEDGING. *Bird-Banding* 40(3): 208-215, 2 figs. July 1969. *WR 137: 88*
[Univ. Mich., Ann Arbor.] Of 183 wing-tagged nestling robins, 58% were observed after fledging. Typically they remained in their parents' territory for about three weeks, then joined feeding flocks at nearby food sources. Little interchange took place among adjacent flocks.--From summ. Courtesy/ Paul A. Stewart.

Holcomb, L. C. GROWTH AND CALCULATION OF AGE IN THE AMERICAN GOLDFINCH. *Nebr. Bird Rev.* 37: 3-15. 1969. [From Auk 86(4), 1969.] *WR 137: 88*

Hubbard, John P. THE RELATIONSHIPS AND EVOLUTION OF THE *DENDROICA CORONATA* COMPLEX. *Auk* 86(3): 393-432, 8 figs. July 1969. *WR 137: 88*
[Va. Polytechnic Inst., Goshen.] Courtesy/ Paul A. Stewart.

Jayakar, S. D., and H. Spurway. THE YELLOW-WATTLED LAPWING, *VANELLUS MALABARICUS* (BODDAERT), A TROPICAL DRY-SEASON NESTER: III. TWO FURTHER SEASON'S BREEDING. *J. Bombay Nat. Hist. Soc.* 65(2): 369-383, illus. 1968. [From Biol. Abstr. 50(17), 1969.] *WR 137: 88*
[Genet. & Biom. Lab., Govt. Orissa, Bhubaneswar-3, Orissa, India.]

Johnson, Richard F. AGGRESSIVE FORAGING BEHAVIOR IN HOUSE SPARROWS. *Auk* 86 (3): 558-559. July 1969. *WR 137: 88*
[Univ. Kans., Lawrence.] Aggressive behavior occurred among house sparrows *(Passer domesticus)* under pressure to find adequate food supplies, but females were more aggressive than males at a feeder.--Courtesy/ Paul A. Stewart.

Lasiewski, Robert C., and Gregory K. Snyder. RESPONSES TO HIGH TEMPERATURE IN NESTLING DOUBLE-CRESTED AND PELAGIC CORMORANTS. *Auk* 86(3): 529-540, 6 figs. July 1969. *WR 137: 88*
[Univ. Calif., Los Angeles.] Cormorants are often subject to overheating from insolation at the nest. Their generally dark plumage, exposed nest sites, and reradiation from surrounding rocks aggravate the thermal stress. Young nestlings are shielded from the sun by their parents. Older nestlings and adults compensate for heat gain through behavioral adjustments and modulation of evaporative cooling by panting and gular fluttering.--Courtesy/ Paul A. Stewart.

Middleton, A. L. A. THE MOULT OF THE EUROPEAN GOLDFINCH NEAR MELBOURNE VICTORIA. *Emu* 69(3): 145-154, 1 fig. Oct. 1969. *WR 137: 88*
[Univ. Guelph, Ontario, Canada.] *"Carduelis carduelis."*

Naik, R. M., and Abdur Razack. STUDIES ON THE HOUSE SWIFT, *APUS AFFINIS* (G. E. GRAY): 7. SEASONAL CHANGES IN DAILY ACTIVITY RHYTHM. *Pavo Indian J. Ornithol.* 5(1/2): 57-74, illus. 1968. [From Biol. Abstr. 50(24), 1969.] *WR 137: 88*
[Maharaja Sayajurao Univ., Baroda, India.]

Norman, F. I., and M. D. Gottsch. THE PHILLIP ISLAND COLONIES OF THE TASMANIAN MUTTONBIRD, WITH SPECIAL REFERENCE TO THOSE AT CAPE WOOLAMAI. *Emu* 69(3): 137-144, 2 figs. Oct. 1969. *WR 137: 88*
[Monash Univ., Clayton, Victoria, Australia.] *"Puffinus tenuirostris."*

Nottebohm, Fernando. THE SONG OF THE CHINGOLO, *ZONOTRICHIA CAPENSIS*, IN ARGENTINA: DESCRIPTION AND EVALUATION OF A SYSTEM OF DIALECTS. *Condor* 71(3): 299-315, 13 figs. July 1969. *WR 137: 88*
[Rockefeller Univ., New York, N.Y.] The song dialects of various races of the chingolo, Andean sparrow or rufous-collared sparrow *(Zonotrichia capensis)* are discussed.--Courtesy/ Paul A. Stewart.

Orians, Gordon H. AGE AND HUNTING SUCCESS IN THE BROWN PELICAN *(PELECANUS OCCIDENTALIS). Animal Behaviour* 17(2): 316-319. May 1969. *WR 137: 89*
[Univ. Wash., Seattle.] Summary: Adult brown pelicans *(Pelecanus occidentalis)* capture prey on a larger percentage of their dives than immatures hunting under the same conditions. This difference provides at least a partial explanation of delayed maturation and smaller clutch sizes of younger birds in species using skilled foraging techniques.

Ralph, C. L., and Karen B. Lane. MORPHOLOGY OF THE PINEAL BODY OF WILD HOUSE SPARROWS *(PASSER DOMESTICUS)* IN RELATION TO REPRODUCTION AND AGE. *Canadian J. Zool.* 47(6): 1205-1208, 2 figs. Nov. 1969. *WR 137: 89*
[Univ. Pittsburgh, Pittsburgh, Pa.]

Robbins, Sam. NEW LIGHT ON THE LECONTE'S SPARROW. *Passenger Pigeon* 31(3): 267-274, [2] figs. Fall 1969. *WR 137: 89*
[Cadott, Wis.] New records of the LeConte's sparrow establish it as having a summer range across northern Wisconsin. Previous scarcity of records may have been due to the bird's secretive habits, inconspicuous song, and unknown habitat.

Roberts, Joan Beltz. VOCALIZATIONS OF THE RUFOUS-SIDED TOWHEE, *PIPILO ERYTHROPHTHALMUS OREGONUS. Condor* 71(3): 257-266, 3 figs. July 1969. *WR 137: 89*
[Box 113, Selukwe, Rhodesia.] Advertising songs, calls, and quiet songs are discussed.--Courtesy/ Paul A. Stewart.

Rushmore, Francis M. SAPSUCKER DAMAGE VARIES WITH TREE SPECIES AND SEASONS. *USDA Forest Serv. Res. Pap. NE*-136. 19 p., illus. 1969. *WR 137: 89*
[NE Forest Expt. Sta., Upper Darby, Pa.] Abstract: Yellow-bellied sapsuckers *(Sphyrapicus varius varius* L.*)* were observed feeding on 26 tree species and 2 shrub species in Maine and elsewhere in the Northeast on 205 days in April to October 1964-68. Species preferences varied with season. Both hardwoods and conifers received bird peck resulting in damage; some hardwoods were killed; conifers seldom were. The species fed on most were hemlock, red maple, and yellow, paper, and gray birches. Timber management and other implications are discussed.

Schröder, Ernst. DIE GRAUMEISEN UND IHRE LEBENSRÄUME. [THE TITMICE AND THEIR HABITAT.] *Ornithol. Mitteil.* 21(5): 101-102. May 1969. In German. *WR 137: 89*
[Steilhang 18, Lüdenscheid, Germany.] *"Parus palustris* and *P. montanus."*

Schulz, Terry A., and Paul D. Budwiser. SCRUB JAY POSSIBLY FEEDING ON ECTOPARASITES OF A BLACK-TAILED DEER. *Calif. Fish & Game* 56(1): 71. Jan. 1970. *WR 137: 89*
[Univ. Calif. Med. Center, San Francisco.]

Simmons, Gary Adair. INTERRELATIONSHIP OF THE CHIPPING SPARROW AND THE JACK PINE BUDWORM. *M.S. thesis, Mich. Tech. Univ.* 50 p. 1968. *WR 137: 89*
Courtesy/ Norman F. Sloan.

Smith, R. W. J. SCOTTISH CORMORANT COLONIES. *Scottish Birds* 5(7): 363-378, 1 fig. Autumn 1969. *WR 137: 89*
Summary: Some 3000 pairs of cormorants breed in Scotland, about two-thirds of them in the seven largest colonies. The main concentrations are in the southwest and from Easter Ross to Shetland, with one expanding colony in the Forth and smaller ones in the northwest and Outer Hebrides. Details are given of the history, physical characteristics and disturbance of the colonies.

Snell, Margaret L. NOTES ON THE BREEDING OF THE BLUE SWALLOW. *Ostrich* 40 (3): 65-74, 3 pls. Sept. 1969. *WR 137: 89*
[P.O. Box 383, Marandellas, Rhodesia.] *"Hirundo atrocaerulea."*

Toru, Nakamura, S. Yamaguchi, K. Iijima, and T. Kagawa. [A COMPARATIVE STUDY ON THE HABITAT PREFERENCE AND HOME RANGE OF FOUR SPECIES OF THE GENUS *EMBERIZA* ON PEAT GRASSLAND.] *Misc. Repts. Yamashina's Inst. Ornithol.* 5(4): 313-336, illus. 1968. [From Biol. Abstr. 50(24), 1969. In Japanese with English summ.] *WR 137: 90*

[Shimshu Univ., Matsumoto, Nagano, Japan.]

Vermeer, Kees. SOME ASPECTS OF THE BREEDING CHRONOLOGY OF DOUBLE-CRESTED CORMORANTS AT LAKE NEWELL, ALBERTA IN 1968. *Murrelet* 50(2): 19-20. May-Aug. 1969. *WR 137: 90*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] The interval between first egg laid and first young hatched was calculated to be one month. Egg-laying continued for two and a half months.

Vermeer, Kees. THE PRESENT STATUS OF DOUBLE-CRESTED CORMORANT COLONIES IN MANITOBA. *Blue Jay* 27(4): 217-220, [2] figs. Dec. 1969. *WR 137: 90*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Total breeding population in 1969 was estimated to consist of 10,000 birds. The nest count has decreased from 9862 in 1945 to 4772 in 1969.

Watson, Michael. SIGNIFICANCE OF ANTIPHONAL SONG IN THE EASTERN WHIPBIRD, *PSOPHODES OLIVACEUS*. *Behaviour* 35(1-2): 157-178, 6 figs. 1969. In English with German summ. *WR 137: 90*

[Princeton Univ., Princeton, N.J.] Tentative conclusions indicate a threefold function of antiphony in this species: maintenance of contact; maintenance of the pair bond; and territorial advertisement and display. The song of *P. olivaceus* is discussed in relation to *P. nigrogularis* and other passerine antiphonal species. There is a discussion of the possible origin, evolution and adaptive significance of antiphony in *P. olivaceus*.--From summ.

Wepsalainen, Kari. THE EFFECT OF THE COLD SPRING 1966 UPON THE LAPWING *(VANELLUS VANELLUS)* IN FINLAND. *Ornis Fenn.* 45(2): 33-47, illus. 1968. [From Biol. Abstr. 50(23), 1969. With Finnish summ.] *WR 137: 90*

Wimbush, D. J. STUDIES ON THE PIED CURRAWONG *STREPERA GRACULINA* IN THE SNOWY MOUNTAINS. *Emu* 69(2): 72-80, 3 figs. Aug. 1969. *WR 137: 90*

[CSIRO, P.O. Box 109, Canberra, Australia.] Summary: The paper describes the results from banding and retrapping, with some associated measurements, in two winter populations of pied currawongs in the Snowy Mountains. Yellow gape is an immature character; males are the larger sex and the body weight of mature and immature birds declines during the winter. The age grouping of recoveries is different for the two populations in a way which suggests that breeding birds are rather sedentary and large movements occur only among non-breeding adults and immature birds.

Wolf, Larry L. FEMALE TERRITORIALITY IN A TROPICAL HUMMINGBIRD. *Auk* 86(3): 490-504. July 1969. *WR 137: 90*

[Syracuse Univ., Syracuse, N.Y.] This paper documents female territoriality in the highland tropical hummingbird *(Panterpe insignis)* during the nonbreeding season. It also suggests possible ecological factors that produce selective pressure for female territoriality and some possible morphological and behavioral consequences of this territorial social system in hummingbirds.--Courtesy/ Paul A. Stewart.

REPTILES & AMPHIBIANS

Avery, R. A. FOOD AND FEEDING RELATIONS OF THREE SPECIES OF *TRITURUS* (AMPHIBIA URODELA) DURING THE AQUATIC PHASES. *Oikos* 19(2): 408-412, illus. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 90*

[Bristol Univ., Bristol, England.]

Axtell, Carol A., and Ralph W. Axtell. HIBERNACULA, BIRTH AND YOUNG OF *SCELOPORUS GRAMMICUS DISPARILIS* (IGUANIDAE). *Southwestern Nat.* 14(3): 363-366, 1 fig. Jan. 1970. *WR 137: 91*
[Southern Ill. Univ., Edwardsville.]

Baldwin, Kenneth V. THE DISTRIBUTION OF AMPHIBIANS AND REPTILES IN A PORTION OF NORTHEASTERN NEBRASKA. *M.A. thesis, Univ. S. Dak.* 42 p. 1965. *WR 137: 91*
Courtesy/ Webster H. Sills, Jr.

Balinsky, B. I. THE REPRODUCTIVE ECOLOGY OF AMPHIBIANS OF THE TRANSVAAL HIGHVELD. *Zool. Afr.* 4(1): 37-93, illus. 1969. [From Biol. Abstr. 50(23), 1969.] *WR 137: 91*
[Univ. Witwatersrand, Johannesburg, South Africa.]

Banta, Benjamin H., and David Morafka. AN ANNOTATED CHECK LIST OF THE RECENT AMPHIBIANS AND REPTILES OF THE PINNACLES NATIONAL MONUMENT AND BEAR VALLEY, SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA, WITH SOME ECOLOGICAL OBSERVATIONS. *Wasmann J. Biol.* 26(2): 161-183. 1968. [From Biol. Abstr. 50(20), 1969.] *WR 137: 91*
[Mich. State Univ., East Lansing.]

Barbour, Roger W., Michael J. Harvey, and James W. Hardin. HOME RANGE, MOVEMENTS, AND ACTIVITY OF THE EASTERN WORM SNAKE, *CARPHOPHIS AMOENUS AMOENUS*. *Ecology* 50(3): 470-476, 6 figs. Late Spring 1969. *WR 137: 91*
[Memphis State Univ., Memphis, Tenn.] Home ranges covered an average area of 253 m^2, and the longest movement during 24 hours was 45 m. Most movements were initiated in late afternoon. Periods of activity were of less than 12 hours duration, and periods of inactivity varied from a few minutes to 14 days. Displaced snakes showed no homing tendency.--From abstr. Courtesy/ Paul A. Stewart.

Benes, Elinor S. BEHAVIORAL EVIDENCE FOR COLOR DISCRIMINATION BY THE WHIPTAIL LIZARD, *CNEMIDOPHORUS TIGRIS*. *Copeia* 1969(4): 707-722, 6 figs. 5 Dec. 1969. *WR 137: 91*
[Univ. Calif., Davis.]

Berger, Leszek. BIOMETRICAL STUDIES ON THE POPULATION OF GREEN FROGS FROM THE ENVIRONS OF POZNAŃ. *Ann. Zool.* (Warsaw) 23(11): 303-324, illus. 1966. [From Biol. Abstr. 50(17), 1969. In English with Polish and Russian summ.] *WR 137: 91*

Black, Jeffrey Howard, and Judith Norene Black. POSTMETAMORPHIC BASKING AGGREGATIONS OF THE BOREAL TOAD, *BUFO BOREAS BOREAS*. *Canadian Field-Nat.* 83(2): 155-156. Apr.-June 1969. *WR 137: 91*
[Univ. Okla., Norman.] Three groups of from 200 to 1,000 juvenile toads were found along the muddy banks of a beaver pond. The toads were inactive but alert and moved readily into the water when disturbed.

Brain, C. K. FIELD OBSERVATIONS ON LIZARDS (SCINCIDAE: *MABUYA*) IN THE KALAHARI GEMSBOK NATIONAL PARK. *Koedoe* no. 12. p. 1-10, 5 figs. 1969. *WR 137: 91*

Bustard, H. Robert. DEFENSIVE DISPLAY BEHAVIOR IN THE BANDY-BANDY, *VERMICELLA ANNULATA* (SERPENTES: ELAPIDAE). *Herpetologica* 25(4): 319-320, 1 fig. 16 Dec. 1969. *WR 137: 91*
[Australian Natl. Univ., Canberra, Australia.]

Bustard, H. Robert, and Ian Grant. RECORDING ACTIVITY OF SMALL REPTILES AND AMPHIBIANS. *Copeia* 1969(4): 843-847, 5 figs. 5 Dec. 1969. *WR 137: 91*
[Australian Natl. Univ., Canberra, Australia.] Construction and use of a versatile high sensitivity aktograph.

Caldwell, David K. BABY LOGGERHEAD TURTLES ASSOCIATED WITH SARGASSUM WEED. *Quart. J. Fla. Acad. Sci.* 31(4): 271-272. 1968. [From Biol. Abstr. 50(24), 1969.] *WR 137: 92*
[Marineland Res. Lab., St. Augustine, Fla.] *"Caretta c. caretta."*

Claflin, Warren G. LARVAL GROWTH AND DEVELOPMENT OF *PSEUDACRIS TRISERIATA* AND *RANA PIPIENS* IN SEMI-PERMANENT PONDS IN SOUTHEASTERN SOUTH DAKOTA. *M.A. Thesis, Univ. S. Dak.* 45 p. 1962. *WR 137: 92*
Courtesy/ Webster H. Sill, Jr.

Clark, David B., and J. Whitfield Gibbons. DIETARY SHIFT IN THE TURTLE *PSEUDEMYS SCRIPTA* (SCHOEPFF) FROM YOUTH TO MATURITY. *Copeia* 1969(4): 704-706, 3 figs. 5 Dec. 1969. *WR 137: 92*
[Savannah River Ecol. Lab., Box A, Aiken, S.C.]

Cherchi, Maria Adelaide, and Silvio Spano. VIPERIDI ED ELAPIDI DELLO YEMEN. (MISSIONE SCORTECCI 1965). [VIPERIDAE AND ELAPIDAE OF YEMEN. (SCORTECCI MISSION, 1965).] *Boll. Mus. Ist. Biol. Univ. Genova Sez. Biol. Anim.* 34(206-221): 139-148, illus. 1966. [From Biol. Abstr. 50(24), 1969. In Italian with English summ.] *WR 137: 92*
Summarization of these families. "Interesting ecological data are recorded."

Currie, William, and Edward D. Bellis. HOME RANGE AND MOVEMENTS OF THE BULLFROG, *RANA CATESBEIANA* SHAW, IN AN ONTARIO POND. *Copeia* 1969(4): 688-692, 3 figs. 5 Dec. 1969. *WR 137: 92*
[Toronto Teachers Coll., Toronto, Ontario, Canada.]

Darrow, Thomas D. FOOD HABITS OF WESTERN PAINTED AND SNAPPING TURTLES IN SOUTHEASTERN SOUTH DAKOTA AND EASTERN NEBRASKA. *M.A. thesis, Univ. S. Dak.* 37 p. 1961. *WR 137: 92*
Courtesy/ Webster H. Sill, Jr.

Dryden, G. L., and Edward H. Taylor. REPTILES FROM THE MARIANA AND CAROLINE ISLANDS. *Univ. Kans. Sci. Bull.* 48(8): 269-279. 1969. [From Biol. Abstr. 50 (21), 1969.] *WR 137: 92*
[Slippery Rock State Coll., Slippery Rock, Pa.]

Dunlap, Donald G. EVIDENCE FOR A DAILY RHYTHM OF HEAT RESISTANCE IN THE CRICKET FROG, *ACRIS CREPITANS*. *Copeia* 1969(4): 852-854, 1 fig. 5 Dec. 1969. *WR 137: 92*
[Univ. S. Dak., Vermillion.]

Dunstan, Thomas C. AN EASTERN GRAY TREEFROG LIVING IN AN OSPREY NEST. *Loon* 41(3): 92-93. Sept. 1969. *WR 137: 92*
[Univ. S. Dak., Vermillion.]

Efford, Ian E., and Jack A. Mathias. A COMPARISON OF TWO SALAMANDER POPULATIONS IN MARION LAKE, BRITISH COLUMBIA. *Copeia* 1969(4): 723-736, 13 figs. 5 Dec. 1969. *WR 137: 92*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Farrell, Michael P., and James A. MacMahon. AN ECO-PHYSIOLOGICAL STUDY OF WATER ECONOMY IN EIGHT SPECIES OF TREE FROGS (HYLIDAE). *Herpetologica* 25(4): 279-294, 4 figs. 16 Dec. 1969. *WR 137: 92*
[Miss. State Univ., State College.] *"Acris gryllus, A. crepitans, Pseudacris triseriata, Hyla cinerea, H. crucifer, H. squirella, H. versicolor,* and *H. gratiosa."*

Gans, Carl. COMMENTS ON INERTIAL FEEDING. *Copeia* 1969(4): 855-857. 5 Dec. 1969. *WR 137: 92*
[State Univ. N.Y., Buffalo.]

Gibbons, J. Whitfield. ECOLOGY AND POPULATION DYNAMICS OF THE CHICKEN TURTLE, *DEIROCHELYS RETICULARIA*. *Copeia* 1969(4): 669-676, 7 figs. 5 Dec. 1969. *WR 137: 93*
[Savannah River Ecol. Lab., Box A, Aiken, S.C.]

Hammer, Donald A. PARAMETERS OF A MARSH SNAPPING TURTLE POPULATION LACREEK REFUGE, SOUTH DAKOTA. *J. Wildl. Mgmt.* 33(4): 995-1005, 6 figs. Oct. 1969. *WR 137: 93*
[Lacreek Natl. Wildl. Refuge, Martin, S. Dak.] Abstract: Recapture of snapping turtles *(Chelydra serpentina)*, marked by attaching metal tags to a marginal shield, showed that movement occurred primarily within a single marsh unit. Mean distance moved between recaptures was 0.57 miles. Capture-recapture methods yielded an estimate of 2,415 adults or 1 per 2 acres. Predators destroyed 59 percent of the turtle nests. Hatching emergence was less than 20 percent in undisturbed nests. Immigration contributed more to population maintenance and growth than did reproduction on the Refuge. Annuli in bony structures may be useful to age turtles. Data from recaptures, captives, and annuli evaluations suggested individual growth follows a sigmoid curve.

Harris, Herbert S., Jr. DISTRIBUTIONAL SURVEY: MARYLAND AND THE DISTRICT OF COLUMBIA. *Bull. Md. Herpetol. Soc.* 5(4): 97-161, 88 figs. Dec. 1969. *WR 137: 93*
[Nat. Hist. Soc. Md., 2643 North Charles St., Baltimore, Md.] Distribution maps are provided for the 88 forms of reptiles and amphibians listed.

Henrich, Thorston W. MORPHOLOGICAL EVIDENCE OF SECONDARY INTERGRADATION BETWEEN *BUFO HEMIOPHRYS* COPE AND *BUFO AMERICANUS* HOLBROOK IN EASTERN SOUTH DAKOTA. *M.A. thesis, Univ. S. Dak.* 34 p. 1965. *WR 137: 93*
Courtesy/ Webster H. Sill, Jr.

Herban, Nancy L., and Robert G. Yaeger. BLOOD PARASITES OF CERTAIN LOUISIANA REPTILES AND AMPHIBIANS. *Am. Midland Nat.* 82(2): 600-601. Oct. 1969. *WR 137: 93*
[La. State Univ., New Orleans.]

Herpetological Information Search Systems. CURRENT HERPETOLOGICAL TITLES, VII: 1968-69. *Herpetol. Rev.* no. 8. p. 7-32. Sept. 1969. *WR 137: 93*
[Am. Mus. Nat. Hist., New York, N.Y.] Previous listing of this bibliography in *Wildlife Review* have appeared under the name, H. G. Dowling.

Hillman, Peter E. HABITAT SPECIFICITY IN THREE SYMPATRIC SPECIES OF *AMEIVA* (REPTILIA: TEIIDAE). *Ecology* 50(3): 476-481, 7 figs. Late Spring 1969. *WR 137: 93*
[Univ. S. Dak., Vermillion.] Three sympatric species of *Ameiva* in Costa Rica *(A. quadrilineata, A. festiva,* and *A. leoptophrys)* were found in distinct habitats with respect to vegetation cover, ground insolation, environmental temperatures, surface litter, and activity periods.--From abstr. Courtesy/ Paul A. Stewart.

Ideker, Joe. SECONDARY INTERGRADATION BETWEEN *BUFO AMERICANUS AMERICANUS* HOLBROOK AND *BUFO WOODHOUSEI WOODHOUSEI* GIRARD IN SOUTHEASTERN SOUTH DAKOTA. *M.A. thesis, Univ. S. Dak.* 82 p. 1968. *WR 137: 93*
Courtesy/ Webster H. Sill, Jr.

Ireland, Leonard C., William N. Hayes, and Laurence H. Laddin. RELATION BETWEEN FREQUENCY AND AMPLITUDE OF VISUAL ALARM REACTIONS IN *PSEUDEMYS SCRIPTA*. *Animal Behaviour* 17(2): 386-388, 2 figs. May 1969. *WR 137: 93*
[State Univ. N.Y., Buffalo.] Summary: The visual reaction of *P. scripta*, which consists of head withdrawal elicited by a rapidly enlarging shadow, was measured with a photoelectric cell arranged so that head withdrawal brought about a proportional oscilloscope deflection. The amplitude of the visual alarm reaction differed for different speeds of shadow enlargement. Also the reaction could be thoroughly habituated.

Johnson, Clifford Ray. AGGREGATION AS A MEANS OF WATER CONSERVATION IN JUVENILE *LIMNODYNASTES* FROM AUSTRALIA. *Herpetologica* 25(4): 275-276. 16 Dec. 1969. *WR 137: 94*
[Univ. Queensland, St. Lucia, Brisbane, Australia.]

Johnson, Clifford Ray. OBSERVATIONS ON NORTHERN CALIFORNIA POPULATIONS OF *CNEMIDOPHORUS TIGRIS* (SAURIA: TEIIDAE). *Herpetologica* 25(4): 316-318. 16 Dec. 1969. *WR 137: 94*
[Univ. Queensland, St. Lucia, Brisbane, Australia.] Abstract: *Cnemidophorus tigris mundus* was studied in the North Coast Range of California from 1966 to 1968. Some aspects of the range, distribution, habitat, and activity are discussed.

Koch, A. L., A. Carr, and D. W. Ehrenfeld. THE PROBLEM OF OPEN-SEA NAVIGATION: THE MIGRATION OF THE GREEN TURTLE TO ASCENSION ISLAND. *J. Theor. Biol.* 22(1): 163-179, illus. 1969. [From Biol. Abstr. 50(23), 1969.] *WR 137: 94*
[Ind. Univ., Bloomington.] *"Chelonia mydas."*

Lanza, Benedetto, and Anna Sassi. LE TESTUGGINI TERRESTRI E D'ACQUA DOLCE DELLA SOMALIA (REPTILIA TESTUDINES). [LAND AND FRESH WATER TURTLES OF SOMALILAND (REPTILIA TESTUDINES).] *Monit. Zool. Ital.* 74(suppl.): 257-272, illus. 1966. [From Biol. Abstr. 50(18), 1969. In Italian with English summ.] *WR 137: 94*

Light, Lawrence E. COMPARATIVE BREEDING BEHAVIOR OF THE RED-LEGGED FROG *(RANA AURORA AURORA)* AND THE WESTERN SPOTTED FROG *(RANA PRETIOSA PRETIOSA)* IN SOUTH-WESTERN BRITISH COLUMBIA. *Canadian J. Zool.* 47(6): 1287-1299, 4 figs. Nov. 1969. *WR 137: 94*
[Univ. British Columbia, Vancouver, British Columbia, Canada.]

Michael, Edwin D. A LONGEVITY RECORD FOR A NON-CAPTIVE *ANOLIS CAROLINENSIS*. *Herpetologica* 25(4): 318. 16 Dec. 1969. *WR 137: 94*
[Stephen F. Austin State Univ., Nacogdoches, Texas.] "At least 5 years old when killed."

Myers, Charles W., and A. Stanley Rand. CHECKLIST OF AMPHIBIANS AND REPTILES OF BARRO COLORADO ISLAND, PANAMA, WITH COMMENTS ON FAUNAL CHANGE AND SAMPLING. *Smithsonian Contrib. Zool.* no. 10. ii + 11 p. 1969. For sale by Superintendent of Documents at 25¢. *WR 137: 94*
[Am. Mus. Nat. Hist., New York, N.Y.]

Nussbaum, Ronald A. A NEST SITE OF THE OLYMPIC SALAMANDER, *RHYACOTRITON OLYMPICUS* (GAIGE). *Herpetologica* 25(4): 277-278. 16 Dec. 1969. *WR 137: 94*
[Oreg. State Univ., Corvallis.]

Nussbaum, Ronald A. NESTS AND EGGS OF THE PACIFIC GIANT SALAMANDER, *DICAMPTODON ENSATUS* (ESCHSCHOLTZ). *Herpetologica* 25(4): 257-262, 2 figs. 16 Dec. 1969. *WR 137: 94*
[Oreg. State Univ., Corvallis.]

Pianka, Eric R. NOTES ON THE BIOLOGY OF *VARANUS EREMIUS*. *West Austr. Nat.* 11(2): 39-44, illus. 1968. [From Biol. Abstr. 50(23), 1969.] *WR 137: 94*
[Univ. Texas, Austin.] Goanna (desert lizard) habits are discussed.

Pianka, Eric R. HABITAT SPECIFICITY, SPECIATION, AND SPECIES DENSITY IN AUSTRALIAN DESERT LIZARDS. *Ecology* 50(3): 498-502, 1 fig. Late Spring 1969. *WR 137: 94*
[Univ. Texas, Austin.] The large amount of environmental heterogeneity and intimate mixing of habitats in Australia allow many more lizard species to coexist there than in North America.--Courtesy/ Paul A. Stewart.

Pooley, A. C. PRELIMINARY STUDIES ON THE BREEDING OF THE NILE CROCODILE *CROCODYLUS NILOTICUS*, IN ZULULAND. *Lammergeyer* no. 10. p. 22-44. June 1969. *WR 137: 95*
Nest site selection, clutch sizes, parental care during incubation, predators of eggs and hatchlings, and results of artificial incubation of 25 clutches are discussed.

Pooley, A. C. SOME OBSERVATIONS ON THE REARING OF CROCODILES. *Lammergeyer* no. 10. p. 45-57. June 1969. *WR 137: 95*
Construction of holding ponds, diet, and treatment of injuries and diseases.

Pooley, A. C. THE BURROWING BEHAVIOUR OF CROCODILES. *Lammergeyer* no. 10. p. 60-63. June 1969. *WR 137: 95*

Rand, A. Stanley. COMPETITIVE EXCLUSION AMONG ANOLES (SAURIA: IGUANIDAE) ON SMALL ISLANDS IN THE WEST INDIES. *Breviora* 319: 1-16, illus. 1969. [From Biol. Abstr. 50(22), 1969.] *WR 137: 95*
[Smithsonian Trop. Res. Inst., Balboa, Canal Zone.]

Routa, Robert A. SEA TURTLE NEST SURVEY OF HUTCHINSON ISLAND, FLORIDA. *Quart. J. Fla. Acad. Sci.* 30(4): 287-294, illus. 1967. [From Biol. Abstr. 50 (17), 1969.] *WR 137: 95*
[Fla. Board Conserv. Mar. Lab., St. Petersburg.]

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[Univ. Coll. Cape Coast, Cape Coast, Ghana.]

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AUTHOR INDEX

	Page
Abelentsev, V. I.	20
Ables, Ernest D.	34
Ables, Juanita	34
Achieng, A. P.	11
Adams, David A.	13
Aguayo L., Anelio	48
Airapet'yants, A. E.	30
Alden, Peter	57
Alkon, Philip U.	21
Allan, T.	42
Allouse, Bashir E.	18
Alsop, Fred J. III	50,86
Andersen-Harild, Pelle	50
Anderson, Allen E.	42
Anderson, Bertin W.	68
Anderson, Daniel W.	5
Anderson, David R.	72
Anderson, William L.	63,64
Andrews, Charles Lawrence	22
Andrews, Ralph	69
Anell, Bengt	9
Angelova, V.	19
Arend, Philip H.	13
Ariagno, Daniel	59
Ashmole, N. P.	76
Atkins, Leonard	51
Aune, Ola Arne	23,29,31,34
Aus, Philip B.	13
Austin, David H.	68
Autry, D. C.	46
Avery, R. A.	90
Aviatabile, Alphonse	69
Axtell, Carol A.	91
Axtell, Ralph W.	91
Azzaroli, L.	18
Bagshaw, Clive	69
Bailey, E. D.	32
Baillie, James L.	3
Baker, B. E.	48
Baldwin, Kenneth V.	91
Balinsky, B. I.	91
Ball, I. Joseph, Jr.	72
Bancroft, William L.	23
Banta, Benjamin H.	18,91
Baptista, Luis F.	84
Barabash-Nikiforov, I. I.	31
Barber, Thomas A.	39
Barbour, Roger W.	25,91
Barbu, Profira	31
Barick, Frank B.	11
Barnes, M. T.	77
Barratt, Robert	69
Barth, Edvard K.	53
Bartmann, Richard M.	64
Bartonek, James C.	69
Barus, V.	62
Basa, L. Y.	27
Bashenina, N. V.	81
Baskin, L. M.	39
Bathard, A. H.	27
Batt, Bruce D. J.	69
Bauer, Willy	76
Bell, B. D.	53
Bell, J. Frederick	20
Bellis, Edward D.	92
Benes, Elinor S.	91
Benham, Earl L.	80
Benson, C. W.	34
Bentley, A.	34
Berger, Andrew J.	86
Berger, Leszek	91
Bergerud, Arthur T.	35,65
Berner, Alfred	65
Berry, L.	9
Besser, Jerome F.	84
Best, L. W.	26
Best, Peter B.	47
Bianki, V. V.	5
Bider, J. R.	24
Bigalke, R. C.	32
Binsztein, Norma	25
Bishop, Richard A.	69
Biswell, Harold H.	14
Black, Hugh C.	12
Black, Jeffrey Howard	91
Black, Judith Norene	91
Blake, Charles H.	60
Blaker, D.	77
Blondel, Jacques	55
Bochenski, Zygmunt	77,81
Boddicker, M. L.	31
Bodle, John E.	61
Boeker, Erwin L.	9
Bohnsack, Burkhard	84
Boiry, Lilian	25
Bookhout, Theodore A.	30
Borneman, John C.	83
Borowski, Stanislaw	86
Bournard, Michel	59
Bowden, David C.	42
Bowden, Gary K.	12
Boyd, J. M.	9
Brackbill, Hervey	53,86
Brain, C. K.	91
Braithwaite, L. W.	70,71
Brewer, A. D.	77
Bridges, Robert J.	42
Briedermann, L.	35
Brisbin, I. Lehr, Jr.	68
Brna, Jan	35
Broekhuysen, G. J.	70,86
Brown, D. W. J.	12
Brown, G.	11
Brown, Jerram L.	59
Brown, L. E.	23
Brown, S. G.	47
Brown, Wm. T.	2
Browning, Bruce M.	29

	Page
Brunetti, Oscar A.	42
Bruun, Bertel	77
Bryden, M. M.	48
Buckner, Charles H.	20
Budd, G. M.	48
Budker, Paul	48
Budwiser, Paul D.	89
Buffington, Charles D.	17
Burger, George V.	28
Burgess, Harold H.	70
Burtt, Harold E.	84
Busch, Cristina	25
Busse, Przemyslaw	50
Bustard, H. Robert	91
Byrd, Elon E.	67
Cadbury, Joseph M.	60
Caldwell, David K.	48,92
Caldwell, Melba C.	48
Camenzind, Franz J.	82
Cameron, R. A. D.	61
Campbell, John M.	81
Campbell, R. Wayne	81
Canutt, Paul R.	23
Capp, John C.	35
Carlisle, D. B.	35
Carlson, Karen	2
Carothers, Steven W.	19
Carpenter, James W.	28
Carpenter, Max	30
Carr, A.	94
Carr, Douglas	84
Carr, Harold D.	65
Carvalho, Cory T. De	18
Casebeer, R. L.	14
Caslick, J. W.	13
Casto, Stanley D.	62
Causey, M. Keith	77
Cehak, K. C. R.	48
Chapman, Joseph A.	22
Chase, Julia	20
Cherchi, Maria Adelaide	92
Cherry, Thad	67
Childs, Henry E., Jr.	4
Chippendale, G. M.	50
Chiriac, Elena	31
Choate, Grover A.	4
Choate, Jerry R.	23
Christensen, N. Hesselbjerg	55
Christensen, Robert E.	5
Christisen, Donald M.	66
Claflin, Warren G.	92
Clark, David B.	92
Clark, George A., Jr.	52
Clark, J. V.	38
Clark, K.	15
Clark, Tim W.	28
Clarke, C. H. D.	9
Clarke, R.	12
Clarke, R. T. J.	35
Clarke, Robert	48
Clement, Paul W.	28
Clench, Mary Heimerdinger	55
Cline, David R.	57
Cochran, William W.	76
Cody, Martin L.	51
Cole, D. A.	23
Collias, Elsie C.	53
Collias, Nicholas E.	53
Constantine, Denny G.	19,20
Cook, H. W.	48
Cook, Jack L.	15
Cook, Robert Edward	59
Cooper, J.	77
Cordell, Harold K.	11
Corell, M. Gil	28
Cornwell, George W.	74
Cottier, E. J.	77
Courtenay, Walter R., Jr.	96
Cowardin, Lewis M.	71
Craighead, John J.	35
Crawford, Hewlette S.	51
Creed, William A.	44
Crissey, Walter F.	72
Cromartie, Eugene	7
Cronkite, Donald	28
Cross, D. J.	67
Crutchfield, J. A.	11
Cunningham, M. P.	8
Curnow, Richard	71
Currie, William	92
Curry-Lindahl, Kai	33
Curry, Peter	69
Curtis, Steven G.	55
Cushwa, Charles T.	15
Dachy, P.	31
Dagg, Anne Innis	36
Dalen, Raymond S.	83
Dalquest, Walter W.	18
Dana, Thomas	48
Daniel, M. J.	26
Daniels, D. M.	2
Darrow, Thomas D.	92
Davis, Jerry A.	17
Davis, R. K.	12
Davis, Russell	20
Davis, Russell S.	77
Davis, Wayne H.	25
Dawkins, Richard	77
Dawson, William R.	52
Day, Albert M.	11
Dean, W. R.	57
De Balsac, H. Heim	20
Debbie, J. G.	8
De Grazio, John W.	84
Delmee, E.	31
DeLong, Robert L.	59
De Lucca, C.	57
Denney, Richard N.	9,36
Dennis, John V.	87
Derim-Oglu, E. N.	87
De Schneidauer, Thierry Robyns	75
de Vos, Antoon	13

	Page
deVries, R.	55
Dickie, Robert T.	9
Dickinson, Nathaniel R.	42
Dickneite, Dan F.	67
Dillaway, Ron C.	55
Dimock, Edward J. II	12
Dimond, J. B.	7
Di Pace, Maria	25
Dobrinskii, L. N.	66
Dodge, Wendell E.	12,23
Doichev, R. L.	84
Dole, Jim W.	96
Dollfus, Robert Ph.	48
Domey, Richard G.	96
Donham, Richard S.	52
Doucet, G. J.	24
Douglas, Charles L.	24
Downes, M. C.	34,36,48
Downhower, Jerry F.	29
Downing, Eleanor	85
Downing, Paul	85
Downing, Robert L.	11
Dowsett, R. J.	38
Drewien, Rod C.	56
Drury, William H., Jr.	57,79
Dryden, G. L.	92
Dudderar, Glenn R.	23
Duebbert, Harold F.	71
Dunlap, Donald G.	92
Dunstan, Thomas C.	92
Dupuy, A.	5
Durell, James S.	11,62
Dyer, M. I.	85
Dyer, William G.	31
Eadie, W. R.	13
Easy, G. M. S.	77
Eaton, Randall L.	16
Eaton, S. W.	81
Ebert, Earl E.	31
Edwards, William R.	62,63
Efford, Ian E.	92
Ehrenfeld, D. W.	94
Ellis, Jack A.	62,63
Ellis, Richard I.	35
Engle, J. W., Jr.	15
Ennis, T.	77
Epps, E. A., Jr.	16
Erickson, Albert W.	57
Erickson, John E.	56
Eriksson, Kalervo	77,87
Erlinge, Sam	31
Erpino, Michael J.	85
Evans, P. R.	56
Evans, Raymond A.	67
Evans, Roger M.	87
Everard, C. O. R.	18
Fadeev, E. V.	36,39
Fairall, N.	36,42
Fairley, J. S.	33
Farmes, Robert E.	71
Farrell, Michael P.	92
Fay, L. D.	62
Feare, C. J.	77
Fellay, Rene	36
Field, C. R.	37
Fischer, Wayne A.	37
Fisler, George F.	16
Fokin, I. M.	30
Fontenot, J. P.	43
Forcum, Donald L.	19
Forest, G. W.	57
Fouch, William R.	28
Fowler, James F.	46
Frank, Edward J.	64
Frank, Fritz	24
Franklin, T. E.	44
Franks, Edwin C.	81
Fredrickson, Larry F.	56
Fredrickson, Leigh H.	71
Fredriksson, Stig	56
Freeman, G. H.	37
Fresquez, A. A.	21
Frith, H. J.	70,71
Frost, P. G. H.	70
Fruzinski, B.	22
Fuller, W. A.	24
Gaisler, Jiří	18,20
Gajić, Ivan	64
Gallopin, Gilberto	25
Gambell, Ray	47,48
Gans, Carl	92
Garrido, O. H.	62
Gates, David M.	5
Geis, Aelred D.	72
Genest-Villard, H.	22
Genoways, Hugh H.	24
George, J. C.	50
Getz, Lowell L.	24,25
Ghorbial, L. I.	35
Gibb, J. A.	22
Gibbons, J. Whitfield	92,93
Gihr, Margarete	48
Gilbert, Douglas L.	38
Gilbert, Frederick F.	6,32
Gilbert, V. C.	3
Giles, Robert H., Jr.	9,17
Gill, R. Bruce	42
Gilliard, E. T.	57
Giltz, Maurice L.	84
Gladkina, T. S.	24
Glover, Fred A.	38
Glue, D. E.	81
Gnielka, Reinhard	53
Goddard, John	37
Goddard, Stephen V.	85
Goodliffe, V. H.	87
Gorski, Leon J.	87
Gottsch, M. D.	88
Goudy, William H.	78
Graber, Raymond E.	15
Graham, A. D.	41
Grangeiro, Bento Fradique	49

Page

Grant, Ian 91
Grant, P. R. 52,78
Graves, Jerry B. 77
Greaves, J. H. 27
Greeley, Frederick 88
Greenwood, Raymond J. 72
Greer, John Keever 96
Greve, K. 59
Grier, James W. 82
Grigg, Richard W. 48
Gross, Jack E. 37
Grzybowski, J. A. 81
Guarino, Joseph L. 84
Guidal, J. A. 56
Gwinner, E. 54
Gwynne, M. D. 3
Gysel, Leslie W. 65
Haapanen, Antti 75
Habermann, Helen M. 72
Hagemeyer, Dirk 73
Hakonson, Thomas 45
Hall, George A. 56
Halls, Lowell K. 16
Hamilton, P. H. 37
Hammer, Donald A. 24,93
Hammond, L. E. 27
Hancock, Mary 87
Hanks, J. 17,37,38
Hansen, Henry L. 44
Hardin, James W. 25,91
Harkema, R. 85
Harlow, Richard F. 16,43
Harmon, Keith W. 13
Harper, William R. 6
Harrington, Bob 43
Harrington, G. N. 4
Harris, Herbert S., Jr. 93
Harrison, C. J. O. 51,68,87
Harvey, Michael J. 91
Haugen, Arnold O. 43
Hausmann, Klaus 78
Hawn, Louis J. 43
Hayes, William N. 93
Hays, Helen 72,85
Heady, Harold F. 14
Heath, Robert G. 72
Helle, Timo 60
Helminen, Matti 6,17,30,62,75
Helms, Carl W. 52
Hemingway, P. 12
Hemmingsen, Axel M. 56
Hendee, John C. 9
Hendricks, L. D. 85
Henrich, Thorston W. 93
Henry, Dale B. 30
Henry, Vernon G. 39
Henson, James 15
Herban, Nancy L. 93
Herpetol. Inf. Search Systems 93
Hesselton, William T. 43
Hester, Albert E. 88

Page

Hewson, Raymond 78
Hibbs, Dale 38
Hickey, Joseph J. 5,69
Higgins, Kenneth F. 72,75
Hildén, Olav 87
Hillman, Peter E. 93
Hirschfeld, Sue E. 4
Hirth, David H. 88
Hitchins, P. M. 38
Hjorth, Ingemar 51
Hoddenbach, Gerard A. 96
Hoffmann, Robert S. 20
Hoffmeister, Donald F. 19
Holcomb, Larry C. 61,85,88
Holdgate, M. W. 4
Holgersen, Holger 51,56
Holler, Nicholas R. 22
Holmes, R. T. 78
Hooper, Robert G. 51
Hoover, Robert L. 10
Hopkins, Milton N., Jr. 78
Horn, Charles L., Jr. 54
Horner, B. Elizabeth 27
Hornocker, Maurice G. 35,76
Hosono, Tetsuo 85
Howard, George P., Jr. 43,44
Howard, Walter E. 18
Howell, D. J. 21
Hubbard, John P. 88
Hughes, Donald F. 5
Hughes, Maryanne Robinson 73,78
Hundley, Margaret H. 61
Huxter, D. S. 65
Ideker, Joe 93
Iglesias, Rafael E. 38
Iijima, K. 90
Impekoven, Monica 77,78
Ingolfsson, Agnar 78
Ireland, Leonard C. 93
Irwin, Michael P. Stuart 58
Isaković, Ivan 38
Isgrig, Dan 2
Ivanter, E. V. 73
Jackson, William B. 27
Jacobs, Rodney D. 16
Jacobsen, J. Ramse 55
Jahn, Bert J. 74
James, George A. 11
Janzen, Daniel H. 54
Jayakar, S. D. 88
Jefferies, D. J. 32
Jenkins, David 38
Jenkins, James H. 4
Jenni, Donald A. 79
Jennrich, R. I. 8
Jensen, S. 6
Johnels, A. G. 6
Johns, J. E. 79
Johnsgard, Paul A. 73
Johnson, Clifford Ray 94
Johnson, Donald R. 30

Page

Johnson, Marvin K. 73
Johnson, Richard F. 88
Jones, G. L. 27
Jones, Gwilym S. 20
Jones, J. Knox, Jr. 23,24
Jones, M. B. 44
Jones, Robert L. 64
Jones, Tecwyn 13
Jonsgård, Åge 48
Jososoedarno, Soewito 20
Jovanović, Vojislav 51
Jović, Vladislava 64
Judd, Frank W. 18,25
Kadlec, John A. 79
Kagawa, T. 90
Kahmann, Hermann 25
Kale, Herbert W. II 61
Kametkar, L. R. 29
Kanamori, Masaomi 26
Kanteena, D. 86
Karpovich, V. N. 5
Karyakarte, P. P. 32
Kauhanen, Heikki 73
Kavanau, J. L. 17
Keep, M. E. 38
Kefferoes, D. J. 32
Kellogg, Forest Edwin III 62
Kenaga, Eugene E. 6
Kennedy, R. J. 54
Kennelly, James J. 32
Kepner, R. E. 44
Kettle, D. S. 3
King, J. M. 37,38
Kirkpatrick, R. L. 43
Kirsch, Leo M. 72,73
Kistner, Theodore P. 43
Kliebe, Karl 76
Klimstra, W. D. 46
Knox, Kirvin L. 45
Knuckey, J. 49
Koch, A. L. 94
Koford, Carl B. 30
Kolyushev, I. I. 20
Komarek, E. V., Sr. 16
König, C. 82
Koplin, James R. 6
Koshinsky, Gordon 25
Koshinsky, Margaret 25
Kotov, V. A. 38
Kramshøj, Erik 50
Krefting, Laurits W. 32,44
Kridler, E. 49
Krochko, Yu. I. 20
Kulzer, Erwin 20
Kuttler, K. L. 44
Kuznetsov, G. V. 39
Labisky, Ronald F. 9,64
Lack, D. 56
Laddin, Laurence H. 93
Lahti, Seppo 30
Lahtinen, Jukka 66

Page

Lambert, K. 79
Lamont, Thair G. 7
Lampio, Teppo 11
Lane, John 3
Lane, Karen B. 89
Langvatn, Rolf 58
Lannom, Joseph R., Jr. 96
Lanza, Benedetto 94
Larsen, Jørgen 56
Larsen, Thor 30
Lasiewski, Robert C. 52,88
Laskey, Amelia R. 52,61
LaVal, Richard K. 21
Lawrence, M. J. 21
Lawrence, William H. 12
Laws, R. M. 39
Lea, David 77
Le Boeuf, Burney J. 49
Leck, Charles F. 54
LeCroy, M. 57
Ledger, J. A. 19
Leege, Thomas A. 14
Leidahl, Gordon 68
Lent, P. C. 39
Lentfer, J. W. 30
Lenz, Lawrence 74
Leontyeva, M. N. 17
LeResche, Robert E. 60
Lesel, R. 22
Lewies, R. W. 85
Lichard, M. 8
Lidicker, William Z., Jr. 19,25
Light, Lawrence E. 94
Ligon, J. David 82
Lind, Esko A. 66
Linder, Raymond L. 75
Lindzey, James S. 23
Liscinsky, Stephen A. 44
Long, Charles A. 28
Longcore, Jerry R. 69
Longhurst, William M. 14,44
Lorenz, K. 54
Loveless, Charles M. 84
Low, Jessop B. 74
Loyttyniemi, K. 66
Lund, Robert C. 44
MacCarter, Donald L. 6
MacCarter, Douglas S. 6
MacLean, S. F., Jr. 25
MacLennan, R. R. 32
MacMahon, James A. 92
Macnae, William 4
Maguire, H. F. 13
Mahringer, Eric B. 85
Makacha, Stephen 33
Makatsch, Wolfgang 79
Mallette, Robert D. 83
Mambetzhumaev, A. M. 17,58
Manuel, Frank 35
Marakov, S. V. 31
Marchinton, R. Larry 42

	Page
Marckworth, Gordon D.	3
Marsh, Rex E.	18
Marshall, David B.	5
Marti, F.	28
Martin, Richard P.	28
Martin, Robert E.	15
Martin, Russell J.	19
Martin, Stephen G.	51
Martin, William E.	6
Martinson, R. Kahler	72
Martz, Gerald F.	73
Maser, Chris	21
Mathiak, Harold A.	54
Mathias, Jack A.	92
Mathisen, John E.	73,82
Matschke, George H.	39
Matthews, Earle D.	2
Mayfield, Harold F.	60
McAllister, H. J.	40
McBroom, James T.	14
McCaffery, Keith R.	44
McCarley, Howard	28
McChesney, Albert E.	39
McCoy, George L.	46
McCullagh, K.	39
McCulloch, Clay Y.	45,46
McDonald, Malcolm E.	73,74
McDowell, Robert D.	4
McGinnes, Burd S.	23
McKean, J. L.	71
McKnight, Donald E.	74
McLaughlin, E. T.	68
McNabb, F. M. A.	63
Meanley, Brooke	54
Medica, Philip A.	96
Medin, Dean E.	42
Meeks, Robert L.	14
Meerdink, Gavin L.	19
Mehrhoff, L. A., Jr.	46
Mendez, E.	58
Menzie, Calvin M.	7
Mermod, Claude	25
Meyburg, Berndt-Ulrich	82
Michael, Edwin D.	94
Michaelsen, Jan	56
Michels, Heinz	58
Middleton, A. L. A.	88
Mikkola, Heimo	60,82
Miller, Bryan E.	19
Miller, Donald H.	25
Miller, G. C.	85
Miller, Robert L.	85
Milne, R. C.	3
Milstein, P. Le S.	74
Mitchell, F.	12
Moksnes, Arne	58
Mollen, Gunstein Uleberg	82
Monroe, Burt L., Jr.	58
Morafka, David	91
Mordvinov, Yu. E.	48
Moreau, R. E.	56
Morejohn, G. Victor	61
Mote, William R.	82
Muka, S. F.	3
Mulhern, Bernard M.	7
Muller-Willie, Linna L.	49
Munkačević, Vinko	35
Murphy, Joseph R.	82
Murton, Philip G.	78
Myers, Charles W.	94
Myrberget, Svein	31
Nagy, Julius G.	39,45
Naik, R. M.	88
Nasibov, C. B.	33
Naumov, N. P.	39
Neave, David J.	7
Nee, James A.	29
Neff, Don J.	46
Nero, Robert W.	82
Newsom, John D.	46
Newton, I.	62
Nicholson, B. D.	13
Nikolaev, A. M.	31
Nikolandić, Đuro	35
Nikul'tsev, A. P.	66
Nilsson, Leif	74
Nisbet, I. C. T.	57
Nitecki, C.	58
Niven, P. N. F.	58
Norberg, Ulla Maria	21
Norderhaug, Magnar	4,49
Norman, F. I.	88
Norris, T. Michael	18
Nosek, J.	8
Nottebohm, Fernando	88
Novikov, G. A.	30
Nussbaum, Ronald A.	21,94
Oatley, T. B.	51,79
Ogaswara, Ko.	65
Oh, J. H.	44
Oldemeyer, John L.	84
Olech, Bogumila	50
Olson, W. P.	27
Olsson, M.	6
Onion, Daniel K.	79
Orians, Gordon H.	89
Orr, Lowell P.	96
Osmolovaskaya, V. I.	39
Osmolovskaya, V. I.	62
Oswald, William Patrick	79
Otterlind, G.	6
Ouellet, Henri	58
Ovchinnikova, N. P.	54
Ozoga, John J.	45
Pabst, L. F.	58
Paiva, Melquiades Pinto	49
Paliza, Obla	48
Palmateer, Steve D.	18
Paloheimo, L.	66
Parker, I. S. C.	41,42
Parnell, James F.	57
Parrinder, E. R.	79

	Page
Parrinder, Eileen D.	79
Pastukhov, V. D.	49
Patterson, Stephen	54
Pattie, Donald L.	20
Patton, David R.	9
Paulson, Dennis R.	74
Payne, Robert B.	52,85
Pearse, Peter H.	12,15
Pearson, Oliver	25
Pederson, Rudy J.	15
Penchaszadeh, Pablo	25
Peshev, Ts.	19
Peterson, Richard S.	49
Peterson, William J.	45
Petrides, George A.	9
Petrović, Zlatibor	40
Pianka, Eric R.	94
Piantanida, Martha	25
Piechocki, R.	83
Pienaar, U. de V.	40
Pilleri, Georg	48,49
Pimlott, Douglas H.	4,33
Pirkola, Matti K.	74
Pitelka, F. A.	78
Plowright, W.	8
Poduschka, Walter	25
Pooley, A. C.	95
Popović, Stojan	40
Porter, Warren P.	5
Postnikov, G. B.	26
Poulson, Thomas L.	52
Poulter, Thomas C.	9
Povolný, Dalibor	18,20
Prakash, Ishwar	23,29
Pratt, D. J.	10
Prestwood, Annie K.	67
Preuss, Niels Otto	60
Prince, Harold H.	74
Prinz Reusz, Heinrich III	38
Procter, J.	10
Progulske, D. R.	31
Proud, John C.	67
Prouty, Richard M.	7
Pukinskii, Yu. B.	30
Pulliainen, Erkki	31,32,66
Purohit, K. G.	29
Pynnönen, Alpi	66
Rabol, Jørgen	57
Radwan, M. A.	7
Rafi, Mohammad	10
Rail, Chester D.	19
Raitis, Tapio	6,62
Rajala, Paavo	66
Ralph, C. L.	89
Ramsey, Jed J.	52,86
Rand, A. Stanley	94,95
Randall, David	3
Ranney, Robert	26
Rausch, Robert A.	33
Raveling, Dennis G.	76
Ray, Carleton	49
Razack, Abdur	88
Rea, A. M.	52,86
Recher, Harry F.	80
Recher, Judy A.	80
Redhead, R. E.	83
Reichel, William L.	7
Reinwald, H.	12
Rendahl, H.	57
Rennison, B. D.	27
Retfalvi, Laszlo	40
Reynolds, Hudson G.	45
Rice, Dale W.	49
Richard, P. B.	21
Richards, Richard E.	31
Ricklefs, Robert E.	55,61
Riney, Thane A.	5,10
Risebrough, Robert W.	5
Robbins, Chandler S.	60
Robbins, John M.	2
Robbins, Sam	89
Robel, Robert J.	67
Röben, Peter	21
Roberts, Jerry D.	32
Roberts, Joan Beltz	89
Robeson, Stacy B.	63
Robinette, W. L.	40
Robinson, R. M.	44
Rochat, K.	38
Rogers, Dilwyn J.	40
Rolan, Robert G.	68
Ronald, K.	50
Ropartz, P.	26
Rose, Norman J.	19
Roseberry, J. L.	46
Rosenberg, Neils Thomas	86
Ross, Anthony	83
Ross, I. C.	4,41
Ross, J. G.	33
Roth, Edward	18
Rothschild, E. V.	26
Routa, Robert A.	95
Roux, Charles	48
Rowe-Rowe, D. T.	32
Rowell, T. E.	50
Ruch, Frank E., Jr.	73
Ruhweza, S.	10
Rushmore, Francis M.	89
Russell, H. G. F.	3
Ryan, L. S.	53
Ryel, Lawrence A.	43
Rylander, Kent	3
Sachs, R.	8
Sadler, W. W.	12
Saetvelt, Phil	83
Saibull, S. A. ole	11
Saint-Girons, Marie-Charlotte	17
St. Paul, U. v.	54
Saiza, A.	86
Salfeld, Denise	55
Samarin, E. G.	26
Samuel, William M.	46

	Page
Sapwell, John	95
Saroso, J. Sulianti	20
Sartor, Jürgen	76
Sassi, Anna	94
Savage, David E.	67
Savidge, J. M.	41
Sawada, Isamu	21
Schaller, George B.	33
Scheffer, Victor B.	49
Schenkel, Rudolf	33
Schevill, William E.	49
Schladweiler, J. L.	32
Schmidt, Robert S.	95
Schneider, Hans	95
Schnell, Gary D.	83
Schnurrenberger, Paul R.	19
Schonhardt, Hans	58
Schreiber, R. W.	49
Schröder, Ernst	89
Schulz, Terry A.	89
Schumacher, Paul D.	63
Scott, Robert F.	9
Scott, Virgil E.	9
Šebek, Zdeněk	18,20
Secker, H. L.	80
Sen Gupta, S. N.	86
Severinghaus, C. W.	42,46
Shearer, LeRoy A.	74
Sherburne, J. A.	7
Shields, Mary	83
Shields, Robert H.	80
Shirer, Hampton W.	29
Shoesmith, Merlin W.	35
Shooter, Philip	55
Short, Henry L.	46
Short, Lester L.	80
Sibley, Fred C.	83
Sick, H.	58
Siegel, P. B.	74
Silver, E.	27
Simeonov, S.	58
Simmons, Gary Adair	89
Simon, P.	31
Simonetta, A. M.	18
Simonsen, Torben	56
Sindiyo, D. M.	3
Siniff, Donald B.	57
Skead, David M.	58
Skryabin, N. G.	75
Skutch, Alexander F.	83
Sladen, William J. L.	60,76
Slota, Robert W.	2
Smirnov, P. K.	26
Smith, Dwight G.	82
Smith, Michael H.	26
Smith, R. F. C.	41
Smith, R. W.	27
Smith, R. W. J.	89
Smith, Ronald H.	46
Smyth, Michael	95
Smythe, Robert B.	52
Snell, Margaret L.	89
Snow, D. W.	53
Snyder, Gregory K.	88
Snyder, Walter	41
Sofroniev, Jord	58
Sohn, Arnold J.	46
Solomon, Gordon C.	19
Sopyev, O.	55
Sorensen, Michael F.	22
Southwood, T. R. E.	67
Spano, Silvio	92
Spencer, John S., Jr.	4
Spinage, C. A.	8,41
Spitz, Francois	17
Springer, Paul F.	75
Spurway, H.	88
Stafford, J.	80
Staudenmayer, Theodor	25
Steel, W. S.	10
Stelfox, John G.	33
Sterbetz, I.	76
Stewart, G. F.	12
Stickel, L.	7
Stickel, W.	7
Stienecker, Walter	29
Stoddard, Charles H.	11
Stoddart, D. R.	2
Storm, G. L.	32
Stresemann, E.	53
Stresemann, V.	53
Strokov, V. V.	59
Stuart, Russell W.	14
Studier, Eugene H.	21
Stumpf, Margaret L.	10
Sulkava, Seppo	55,82
Suomalainen, Hannu	75
Suthers, Roderick A.	20
Swartz, L. G.	51
Sweat, Donald E.	95
Swennen, C.	75
Syrjala, L.	66
Szlivka, L.	68
Sztankay, M.	8
Tackle, D.	10
Tanaka, Ryo	26
Taneja, G. C.	23
Tanhuanpää, E.	66
Tanton, M. T.	26
Tarchinski, Ramon	47
Tatarinov, K. A.	20
Taylor, Edward H.	92
Taylor, J. Mary	27
Taylor, K. D.	27
Taylor, M. E.	50
Telfer, Edmund S.	18
Tennison, H. L.	10
Tenora, František	18,20
Tewnion, Alex	80
Theberge, John B.	33
Thielcke, G.	53
Thomas, D. G.	80

	Page
Thomas, Keith P.	63
Thompson, Max C.	59
Thorn, Robert	95
Tierson, William C.	47
Tilbrook, P. J.	4
Timofeeva, E. K.	30
Tinley, J. L.	38
Toccheton, Armando J.	18
Tomberlin, Donald R.	29
Toru, Nakamura	90
Tracy, C. Richard	96
Trainer, D. O.	46
Trautman, Mary A.	59
Trautman, Milton B.	59
Tree, A. J.	80
Tucker, James A.	61
Tulloch, D. G.	41
Turček, F. J.	5
Turner, Frederick B.	8,96
Twiest, G.	85
Tyler, Herb	83
Tyndale-Biscoe, C. H.	41
U.S. Dept. Interior	2
Vallyathan, N. V.	50
Valum, Brynjulf	61
Van Velzen, Willet T.	60
Vanzolini, P. E.	96
van Zyl, J. H. M.	41
Vaughn, R. W.	4
Verme, Louis J.	47
Vermeer, Kees	90
Vernon, J. D. R.	81
Verts, B. J.	22
Vesey-FitzGerald, D. F.	41
Viallard, A. Vallette	21
Villa-R., Bernardo	20
Vincent, J.	41,61
Virkkunen, Ilkka	55
Visagie, G. P.	41
Voelker, Theodore	59,83
Voipio, Paavo	29
Vose, Rory N.	17
Vuattoux, R.	20
Wainright, Larry C.	23
Wakelin, H.	59
Waldeisen, Robert B.	44
Walker, Alan	50
Wallace, D. I. M.	81
Wallace, Gary O.	50
Ward, C. Patricia	22
Ward, G. D.	22
Warner, Dwain W.	68
Warnock, John E.	81
Warren, R. B.	86
Washington, D.	51
Wasilewski, Jacek	59
Wastler, T. A.	8
Watkins, William A.	49
Watson, Michael	90
Watson, R. M.	41,42
Wauer, Roland H.	59
Weary, G. C.	96
Webb, Robert G.	96
Weber, Bruno	83
Webster, T. Preston	96
Weeden, R. B.	12
Wehner, Rüdiger	76
Weigel, Glenn L.	96
Wepsalainen, Kari	90
Westerfrolke, P.	52
Weston, J. Bradford	82
Wharton, Charles H.	96
Wheater, R. J.	10
Wheeler, John R.	19
Whitaker, Eugene A.	10
White, Barbara	3
White, Clayton M.	84
Wilbur, Henry M.	81
Wilder, Edwin H.	11
Willgohs, J. F.	84
Williams, H. Warrington	63
Williams, I. C.	62
Williams, Lovett E., Jr.	68
Williamson, Lonnie Leroy	12
Wilson, Fred E.	52
Wimbush, D. J.	90
Winterbottom, J. M.	58,86
Wiseman, Arthur J.	53
Witham, Ross	96
Woehler, Eugene E.	64
Wolf, Larry L.	90
Wolfe, James L.	50
Woloszyn, Bronislaw W.	21
Wood, Gene W.	23
Wood, Robert C.	60
Wood, Stephen C.	96
Woodall, Dora F.	19
Wrangham, R. W.	50
Wright, Bruce S.	7
Wyk, P. Van	42
Yaeger, Robert G.	93
Yamaguchi, S.	90
Yeager, Lee E.	10
Yeatman, L. J.	60
Yoakum, Jim	13
Young, James A.	67
Yrsaliev, D.	84
Ziegler, Alan C.	19
Zorb, Gordon L.	73
Zuberi, H.	10

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The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.

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